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CUTTING THE GORDIAN KNOT: WHY INTERNATIONAL ENVIRONMENTAL LAW IS NOT ONLY ABOUT THE PROTECTION OF THE ENVIRONMENT

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CUTTING THE GORDIAN KNOT: WHY INTERNATIONAL ENVIRONMENTAL LAW IS NOT ONLY ABOUT THE PROTECTION OF THE ENVIRONMENT

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I. INTRODUCTION

International scholars frequently concur that the plethora of environmental agreements is unfortunately coupled with insufficient monitoring and enforcement.[1] The adoption of international treaties is often followed by disillusionment about eventual enforcement and implementation.

The reality is that international law is chronically weak on enforcement. Moreover, the international system after the Cold War faces challenges that have strained its resources.[2] A careful cost-benefit estimate will, therefore, be needed for the apportionment of those resources. In the face of human calamities that result from civil wars around the globe,[3] it becomes increasingly unpopular to maintain that the bulk of international resources should be dedicated to environmental issues.

The question that emerges, therefore, is how international law, given its particularities and limitations, addresses and could optimally address the problem of regulation of internal resources and global commons. This study attempts to reveal "some order, some rational explanation, and some principle of growth for the rules"[4] of international environmental law. I argue that the function of international environmental law is not only to produce norms coupled with enforcement and monitoring mechanisms, but also to generate discursive, and optimally self-enforcing norms. I maintain further that international environmental law serves three functions: the normative, the discursive, and the promotive. The frequent inability to reach compromise on operative-pragmatic norms has lessened the normative function and has intensified the discursive function. But this should not necessarily be perceived as a failure. Today the normative and promotive functions have been unduly emphasized to the disadvantage of the discursive function. The causes of this misplaced emphasis reside in the widespread misconception about the goals of international environmental law. In this article, I maintain that the normative and promotive functions, while desirable, are not the essential functions of international environmental law. On the contrary, the essential function of international environmental law is the discursive function in accordance with the primary goal of international environmental law—the peaceful co-existence of states.

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[1] Most international environmental conventions do not contain strong monitoring and enforcement mechanisms. The secretariats that administer the conventions are usually underfunded.

[2] Christopher S. Wren, *U.N. Trimming its Peacekeeping Sails*, N.Y. TIMES, Nov. 12, 1995, at 8, col. 1.

[3] *See, e.g.*, John Darnton, *U.N. Faces Refugee Crisis That Never Ends*, N.Y. TIMES, Aug. 8, 1994, at A1, col. 3.

[4] O.W. Holmes, *The Path of Law*, X HARV. L. REV. 457, 465 (1897).

II. THE CASE STUDIES

The following case studies are examined from the perspective of interests that shape international environmental law. These interests, and the force with which they are expressed, factor the norms of international environmental law.

A. Methodology

This study divides the interests that shape international environmental law into two categories: sectorial and transnational interests. Sectorial interests are inclusive of corporate, local, and state interests. State interests could also be called implementation interests because states not only make international law, but they are also bound to observe it. States implement international environmental law by enacting domestic legislation with which local and corporate interests must comply. Thus, the implementation interests differ from the ultimate compliance interests.

Transnational interests constitute a synthesis, under resource constraints, of the sectorial interests with a prospective emphasis. The terminological contrast between sectorial and transnational interests does not necessarily entail a terminal opposition. Certain sectorial interests correspond to transnational interests. This correspondence, in turn, enhances the possibilities of normative compromise or promotive breakthrough. Lack of correspondence induces discursive and non-discursive patterns in search of a normative arrival.

Local interests are restricted in space and time. These are the interests of local communities likely to be affected by an environmental problem at a present time. Local waste management interests are usually the interests of the local communities within a nation-state affected by waste transfers. In the forest management context, local interests are the interests of indigenous and peasant populations that live in or around the forest. In ozone depletion, it is difficult to isolate local interests because of the expected uniform effects of ozone depletion on all humans and the environment.

Corporate interests are the interests of corporations that exhibit different levels and forms of participation in international environmental issues. In forest management, corporate interests are inclusive of food, pharmaceutical, logging and mining industries. In waste management, corporate interests are the interests of the waste management industry and waste generators. The industries that produce CFCs and other ozone depleting substances are the industries which are financially threatened by ozone depletion.

State interests emanate from the states' purpose to handle and resolve efficiently and fairly the issues facing their populations. Quite frequently state interests diverge from the interests of their populations. This is because the governmental and administrative apparatus of certain states is immersed in corruption and is solely concerned with self-enrichment. Obviously, predatory states are not particularly interested in enhancing the conditions of their population.

Governments in general are also eager to secure political survival, and reluctant to take decisions that could alienate certain elites. Moreover, the scarcity of resources restricts the decisionmaking capacity of governments and prevents the follow-up of each and every regulation with monitoring and enforcement mechanisms. From a global perspective, state interests could be defined as a sub-category of local interests. State interests often would represent an uncomfortable compromise between local and transnational interests, and could identify with neither of them.

As indicated by their name, *transnational interests* are the interests of an interdependent world community transmuted by the realistic expectations of sectorial interests and concerns about future survival. Transnational interests must take into account several factors: (1) the practices of sectorial interests; (2) the scarcity of resources; (3) scientific uncertainty; and (4) future survival.

Thus, transnational interests acquire a threshold value. They are affected by both sectorial interests and scientific uncertainty. The latter is prevalent in most environmental issues in that it will often force an articulation of transnational interests at a threshold level. The same is true regarding the scarcity of resources. In a world riddled with different types of crises due to warfare or poverty, it is often difficult to dedicate a large amount of resources to long-term environmental protection. For this reason, "transnational interests" are defined as environmental protection that cannot recede below conditions deprived of a certain environmental value. Prevention of total elimination of an environmental value is the conservation threshold that could be extracted from practices and statements of sectorial interests, the prevailing scientific uncertainty, and the lack of resources to deal with most environmental problems.

Transnational interests, as articulated in this paper, seem to contrast with the current principles of international environmental law: the precautionary principle or approach and the sustainable development principle which includes the notion of intergenerational equity.[5] But this is not so. Transnational interests are, in fact, harmonious with current environmental principles when these principles are viewed as guiding or constitutional principles of environmental action.

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[5] James Cameron & Juli Abouchar, *The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment*, XIV B.C. INT'L & COMP. L. REV. 1, 2 (1991).

Today the precautionary principle dictates almost every environmental action, including actions that could be considered reactive rather than precautionary. The precautionary principle was first enunciated as a principle which would prevent the release of pollutants into the ecosystem when there is a significant risk of unacceptable contamination.[6] The precautionary principle is now included in various environmental legislation.[7] The use of the best available technology, best scientific evidence, environmental impact assessment, prior information and consultation, and strict liability have all been considered expressions of the precautionary principle.[8] Under the High-Seas Fisheries Convention,[9] even emergency and restoration measures after a disaster are labeled precautionary. The same is true with reactive action[10] taken under the Montreal Protocol.[11]

The precautionary principle is different from preventive action. *Preventive action* is to be taken when it is *reasonably foreseeable* that substantial harm will occur. *Precautionary action* is to be taken when there is *significant risk* that substantial harm will occur.[12] It is still unclear whether the differentiation between precautionary principle and preventive action means that the precautionary principle encourages action not only when harm is probable but also when it could be possible. Commentators have not agreed on the fine line which separates reasonable foreseeability and significant risk.[13] As a result, the precautionary principle lacks substantive content. Initially, the precautionary principle was presented to be in conflict with the prevalent perception of assimilative capacity of the environment.[14] However, in the management of natural resources, such as fisheries, the definition of the principle has to be based upon the "assimilative" capacity of the environment. Fisheries management is based on the notion that the marine environment can sustain some exploitation of its fisheries. It is generally accepted in the context of fisheries management that while the environment may not have unbounded assimilative capacity, it can withstand some of the effects of human actions.[15]

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[6] *Id.* at 3.

[7] *Id.* at 4.

[8] *See id.*; Ellen Hey, *The Precautionary Concept in Environmental Policy and Law*, 4 GEO. INT'L ENVTL. L. REV. 303, 305 (1992); David Freestone, *The Precautionary Principle*, INTERNATIONAL LAW AND GLOBAL CHANGE 21, 31 (Robin Churchill & David Freestone eds., 1991).

[9] *See* Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 34 I.L.M. 1542 (1995) [hereinafter Fisheries Convention].

[10] The action taken under the Montreal Protocol is considered here reactive because it was taken after the hole over the Antarctica was detectable and not when there was a significant risk that such a hole will develop in the future. E. BENEDICK, OZONE DIPLOMACY 1 (1991).

[11] *See* Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 26 I.L.M. 1541 (1987) (entered into force Jan. 1, 1989), *amended by* Adjustments and Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer, June 29, 1990, 30 I.L.M. 537 (1991) (entered into force Aug. 10, 1992) [hereinafter Montreal Protocol].

[12] Freestone, *supra* note 8; *see also* Cameron & Abouchar, *supra* note 5, at 3 (defining the precautionary principles as involving "precaution from danger" rather than "prevention of damage"). It is hard again to see the difference between these two distinctions. If one is to prevent damage, then the damage must not occur, thus in essence one prevents from the danger of damage.

[13] Hey, *supra* note 8, at 309-310.

[14] *Id.* at 305.

The "precautionary principle" is frequently replaced in international parlance by the "precautionary approach." The precautionary approach is frequently used as a conservative version of the precautionary principle. The precautionary principle has sometimes been interpreted as a stringent environmental principle indifferent to the costs of pollution prevention. It is frequently mentioned that the precautionary principle involves reversing the burden of proof:[16] it is upon those who affect and exploit the environment to prove that their actions do not have detrimental effects. Reversing the burden of proof for every undertaking would, however, increase the costs of the industry and act as disincentive for the development of new technologies. The precautionary approach, which is inclusive of cost-benefit considerations has, therefore, been proposed as an alternative, more temperate version of "being safe than sorry."[17]

The notion of sustainable development has been subject to different definitions.[18] The most prevalent seems to be the definition proposed by the World Commission on Environment and Development (WCED). WCED was asked by the Secretary-General of the United Nations to propose strategies for sustainable development. The WCED defined sustainable development as "development that meets the needs of present without compromising the ability of future generations to meet their needs."[19] The concept of intergenerational equity has been eloquently developed by Professor Edith B. Weiss as the obligation of present generations to pass on the resources of the planet in no worse condition than they were received.[20] However, Professor Weiss distinguishes the model of intergenerational equity from both the preservationist model, that present generations do not consume anything and save everything for future generations, and the opulent model, contending that present generations consume according to their wishes without considering the effects of their actions on the future.[21] The intergenerational equity model must strike a balance between these two extremes. Professor Weiss maintains that intergenerational equity does not exclude further development which means that "trade-offs" are inevitable.[22] For example, it is acceptable under the concept of intergenerational equity to cause some resource consumption or modest levels of pollution as long as we pass high levels of income and knowledge to future generations so that they can develop substitutes and abate pollution.[23]

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[15] *Id.* at 308.

[16] *See, e.g.*, Cameron & Abouchar, *supra* note 5, at 2.

[17] *See* Rio Declaration on Environment and Development, principle 15, 31 I.L.M. 874 (1992). "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious irreversible damage, lack of full scientific certainty shall not be used as a reason of postponing *cost-effective* measures to prevent environmental degradation." *Id.* (emphasis added).

[18] *See* DAVID PEARCE ET AL., BLUEPRINT FOR A GREEN ECONOMY (1990).

[19] OUR COMMON FUTURE, WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT (1987).

[20] *See* EDITH B. WEISS, IN FAIRNESS TO FUTURE GENERATIONS 17 (1989).

[21] *Id.* at 45-46.

In addition to conservation, intergenerational equity may also involve conversion. "Since not all resources can or should be preserved intact, we should also develop criteria for conversion—a proposition which at first glance may be shocking."[24] In the absence of conversion criteria, however, destruction of resources happens without any planning and could have disastrous consequences.[25]

Transnational interests are in accordance with the precautionary principle or precautionary approach. They are also in accordance with sustainable development and the notion of intergenerational equity. However, transnational interests further acknowledge that in many cases international environmental law is not about prevention of further environmental degradation but avoidance of the worst calamity. This is especially so regarding the management of natural resources. For example, the causes of deforestation in developing countries are overpopulation and land distribution.[26] These are social problems that have been resistant to solution.[27] The question for environmental policymakers, therefore, is whether the remedies prescribed for deforestation should aim at the causes of deforestation or should relieve some of its symptoms.

An ideal policy would involve taking action on both fronts. However, when tackling the causes of environmental degradation involves changing entire social structures, a time consuming and often unsuccessful enterprise, second-best choices must be made available. If it is impossible to conserve all the resources, efforts should concentrate on preventing or remedying some of the loss. Environmental policymaking will have to start from the premise that it is not possible to expect that all the resources will remain intact and that some resources will be liquidated or converted. In these circumstances, the primary concern of policymakers is to provide safeguards for future regeneration or replacement of the resource or adaptation.

Policymakers should also ensure that the decision on the consumption of the resource is an informed decision. Informed decision means knowledge that the resource is to be consumed and possibly monitored in the future to detect adverse impacts. In practice, uncertainty about the consequences of resource depletion will not prevent the consumption of a resource, and it should not, especially when such consumption will alleviate present human needs and suffering.

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[22] *Id.* at 45.

[23] *Id.* at 43.

[24] *Id.* at 51.

[25] *Id.*

[26] ELLI LOUKA, THE TRANSNATIONAL MANAGEMENT OF HAZARDOUS AND RADIOACTIVE WASTES 15-16 (Occasional Paper, Schell Center Series, Yale Law School ed., 1992)

[27] *Id.*

In other words, it is not obvious that environmental protection should assume priority when human action threatens to destroy a certain environment. For example, the destruction of forests in developing countries has been blamed on landless cultivators. It is often seen as incomprehensible that local people cannot see the long-term benefits of conservation because of their short-sighted interests. Conservation policies often miss that when what is at stake is human survival; "long term" is considered the next day. Transnational interests, therefore, recognize that in many cases precautionary action or a ready compromise of environmental and developmental considerations is impossible and what is really needed are criteria for mitigating the destruction of resources.

Mitigation of environmental destruction is incorporated into the precautionary and sustainable development principles.[28] This is why the uncertainty and ambiguity enveloping the principles should not be conceived as a failure. What is sacrificed on the side of normativity is gained in international discourse.[29] The precautionary and sustainable development principles are beneficial if their function is to educate that environmental protection is important.[30] Beyond that, however, specific criteria need to be developed. Such criteria must address the mitigation of destruction.

Transnational interests attempt a practical interpretation of the current principles of international law. In waste management, transnational interests involve the prevention of worst pollution by haphazard and illegal waste disposal. In the case of biodiversity, transnational interests involve prevention of the total eradication of biodiversity.[31] When scientific certainty increases and political commitment becomes stronger, transnational interests prevent further deterioration of an environmental value. When there is significant scientific certainty and the interests at stake are small in number, transnational interests can become more specific and provide clearer guidance for the prescription of international policies. Transnational interests, in ozone depletion, are expressed as prevention of further ozone depletion which entails the cessation of production and consumption of ozone depleting substances.

B. The Case of Transnational Waste Shipments

Hazardous and radioactive waste shipments, especially to developing countries with inadequate waste management infrastructure and lenient environmental laws, have increased and become the target of public opposition in both developed and developing countries.[32] The adoption of the Basel Convention in 1989,[33] legalized such shipments by allowing countries to export waste after acquiring the consent of the importing country.[34] However, prior consent has not legitimized waste movements which are often characterized in the developing world as a new form of imperialism. As a result of the public uproar that these movements generate, state parties decided to ban the export of wastes from North to South five years after the adoption of the Basel Convention.[35] Developing countries, whose industries are in dire need for recyclable wastes, now contend that the ban is nothing more than a conspiracy of the developed world against them.[36]

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[28] Hey, *supra* note 8, at 308-309.

[29] *See infra* part II.

[30] *See also* Carol Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L.J. 1 (1991) (discussing environmental controls and management of resources).

[31] INTERNATIONAL TROPICAL TIMBER ORGANIZATION, ITTO GUIDELINES ON THE CONSERVATION OF BIOLOGICAL DIVERSITY IN TROPICAL PRODUCTION FORESTS 4 (1993).

The interests involved in transfrontier waste movements encompass state, corporate, and local interests. These interests are not incessantly discordant. They could be coinciding, and are dramatically transformed as the boundaries between the national and transnational collapse.

1. Local Interests

Local interests focus on the "not-in-my-backyard" syndrome. Local "communities" within the nation-state are reluctant to accept in their own backyard the waste generated, especially if it comes from other "communities." They argue that each community should be responsible for its own waste.

Given the multiple possible subdivisions of "the local community," which may eventually involve only a single household or industry, the allocation of responsibility for waste disposal eventually blurs, and almost all waste could be characterized as other peoples' waste. The "not-in-my-backyard" syndrome could, therefore, generate different interpretations depending on the perspective of the observer. A local observer could focus on the geographically restricted notion of self-sufficiency that seems to be in agreement with the moral ground of individual responsibility of "not-in-my-backyard." A national or transnational observer would detect, however, abrogation of responsibility since the notion of community in the lexicon of these observers incorporates the nation-state or the world community.

Moreover, the "not-in-my backyard" attitude can have dire economic and environmental consequences. Local interests insisting on self-sufficiency essentially mandate multiplication of disposal facilities that will exacerbate the difficulties of monitoring and enforcement. Local interests also undermine the development of economies of scale that become available when local communities cooperate in building national, regional or transnational facilities.

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[32] LOUKA, *supra* note 26, at 3-4.

[33] Basel Convention on the Control of Transboundary Waste Movements and Their Disposal, Mar. 22, 1989, 28 I.L.M. 649 [hereinafter Basel Convention]. For the waste movements within the African region, see Bamako Convention, May 1991, 30 I.L.M. 773.

[34] *Id.* Basel Convention, *supra* note 33, art. 6, 28 I.L.M. at 664.

[35] The decision to ban North-South hazardous waste transfers became effective in 1994. The decision to ban wastes intended for recycling is to become effective in 1997. *See* Scott Vaughan, *PPMS and International Environmental Agreements*, *in* TRADE AND ENVIRONMENT 127, 132 (Organization of Economic and Cultural Development ed., 1994).

[36] *Muck and Morals*, ECONOMIST, Sept. 2, 1995, at 61.

The deeper rationale of self-sufficiency arguments is that "not-in-my-backyard" pressures will eventually result in waste reduction. This rationale is faulty given the current volumes and *static* dimension of wastes. The *static* dimension of wastes—the perception of wastes as valueless materials that could be disposed of almost anywhere—renders self-sufficiency and waste reduction an unfitting pair.[37] For waste reduction purposes, self-sufficiency as the main goal will lead to illegal disposal when waste management sites are unavailable or expensive. The single-minded preoccupation with self-sufficiency exacerbates the most prominent issue of international waste transfers: illegal waste trafficking.[38]

Despite their narrow character, local interests have influenced verbally and sometimes substantively state discourse. Governments concerned about their appeal to their constituencies have adopted a pro-self-sufficiency vocabulary in domestic and international discourse: a vocabulary not necessarily matched with commitment.[39] Local interests are antithetical to corporate interests because their pursuit of self-sufficiency has increased disposal costs and rendered legal waste disposal an expensive enterprise.

Local interests initially assisted in the creation of a climate that gave birth to the waste management industry. Without public opposition to unsound waste management, no waste management industry would exist and the chances for a dynamic evolution of the waste issue would be poor. Local interests frequently generate a chain of reactions that are positive up to a point; after that point, local interests could become retrogressive.

2. State Interests

States exporting wastes are adversely affected by unlawful waste shipments. In accordance with prevailing international norms, if the unlawful transfer is unveiled, exporting countries will have to take the waste back.[40] This is rather expensive since the costs of waste retrieval and final disposal will not be recovered from the sham companies often involved in illegal trafficking.[41] Illegal waste transfers also damage the reputation of the waste management industry, and consequently the wealth of states that host such industries. A permissive state attitude toward illegal waste exports could also backlash domestically by exacerbating illegal domestic shipments because it would legitimize undetected unlawfulness.

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[37] *See* LOUKA, *supra* note 26, at 5.

[38] *Id.* at 7-8.

[39] For example, the United States, a country with very stringent waste legislation, has been reluctant to ratify the Basel Convention. *Id.* at 14.

[40] Basel Convention, *supra* note 33, art. 8, 28 I.L.M. at 666.

[41] Germany, for example, has incurred significant expenses in its attempts to repatriate illegally exported waste. *See* LOUKA, *supra* note 26, at 105.

Unlawful waste imports will impose significant costs on states because of the future cleanup costs and degradation of natural resources that are the result of haphazard waste disposal. The degradation of natural resources must be a priority consideration for developing countries with scarce water resources, because water contamination by waste disposal could acquire acute dimensions. Nonetheless, due to the urgent economic needs of developing countries, it is tempting to stress the short-term benefits and neglect the long-term costs of waste deals.

In general, states do not maximize their wealth by unlawful waste transfers. On the contrary, frequently unlawful waste transfers force them to internalize industry's costs. Therefore, states have attempted to restrict unlawful shipments, but the prevalent lack of resources is prohibitive of decisive measures and meaningful monitoring and enforcement. Waste is not the most important international or environmental issue.[42] Developed countries face environmental and other problems they conceive as more imperative than waste transfers. Developing countries face additionally serious problems, such as starvation, extreme economic hardship or the AIDS epidemic. It is not surprising, therefore, that despite the fact that illegal waste transfers damage state interests, they may be neglected in the midst of multiple other pressing issues.

States have no interest in preventing lawful waste movements to authorized and sound waste management facilities. In fact, they have strong incentives to support international waste management markets. Such markets could provide waste generators with cheap means of disposal and simultaneously boost the waste management industry, an essential industry for sound waste management. Even importing states have no reason to object to international waste movements if waste imports are accompanied by appropriate infrastructure and technology useful for the treatment of domestic wastes. Currently developing countries have objected against the ban on imports of recyclable wastes because such wastes are useful for their industry.[43]

From a global viewpoint, state interests are an enlarged version of local interests. Many states advocate national self-sufficiency in waste management, despite the contribution of such an advocacy to illegal transfer perpetuation. The state rationale is inevitably confined by political considerations and bows more readily to partisan demands. Yet state allegiance to self-sufficiency remains mostly verbal, due to the costs involved, and contradicted by transnational state practice. For example, despite the obvious disadvantages of waste transfers to developing countries, many of them still encourage or tolerate such transfers.[44]

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[42] *See* U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), UNFINISHED BUSINESS: A COMPARATIVE ASSESSMENT OF ENVIRONMENTAL PROBLEMS (Feb. 1987); LOW-LEVEL RADIATION: A FACT BOOK (The Society of Nuclear Medicine ed., 1982); Bruce N. Ames et al., *Ranking Possible Carcinogenic Hazards*, SCIENCE, Apr. 17, 1987, at 271.

[43] *See supra* note 36 and accompanying text.

[44] *See* LOUKA, *supra* note 26, at 9. German and Dutch companies continue to transfer wastes to Bhopal in India. *See India Urged to Ratify Ban on Toxic Waste*, Reuter Textline, Bang-

State interests are caught in between local and corporate interests. Local self-sufficiency jeopardizes the interests of waste generators—which prefer cheap waste disposal—and the economies of scale offered by waste management industries. States are reluctant to jeopardize the profitability of industry, and increase their own costs by subsidizing illegal waste trafficking through the implementation of self-sufficiency. However, in order to please local interests, states verbally support self-sufficiency, albeit with exceptions, in international arenas. Importing states with no waste management industry could claim a more authentic support for self-sufficiency, a support increasingly unpersuasive due to its regional constrictions.[45] Despite the verbal facade, state interests differ in principle from local interests and are closer to transnational interests. State interests remain mostly indeterminate, and pull both toward the antithetical directions of transnational and local interests.

3. Corporate Interests

The industry affecting and affected by transnational waste shipments is the waste management industry.[46] This industry has grown immensely and could be instrumental in curtailing illegal waste transfers. Wastes, for waste management industries, are not valueless, *static* materials that could be disposed of in any fashion. Rather, waste management industries view wastes in a *dynamic* fashion as materials that increase their profitability, and can be reused and save natural resources.[47] The larger corporations that dominate the waste management market, fearful of besmirching their reputation, are less prone to engage in illegal waste transfers. In fact, they have every incentive to expose illegal traffickers because illegal trafficking hurts their good name and profitability. Bigger industries can also carry risk and are unlikely to disappear after the construction of a facility. Because they have more resources, they can invest in innovative technologies, comply with regulatory requirements, and provide the economies of scale needed for transnational facilities.[48]

Nonetheless, waste management industries must be sensitive to the concerns of waste generators who view wastes statically and are reluctant to implement expensive disposal methods. Waste management industries must also be aware of their limitations. While alternatives to land disposal exist, not all of them are available for all wastes and some of them are still at the experimental stage. Because of the concerns of waste generators and general technology and cost limitations, waste management industries cannot afford

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kok Post, Sept. 10, 1995, *available in* LEXIS, Nexis Library, Reuter Textline File; Pratap Chatterjee, *Marshall Islands Radioactivity Plans Set off Debate*, Inter Press Service, Aug. 4, 1994, *available in* LEXIS, Nexis Library, Inter Press Service File.

[45] African countries agreed to ban waste imports into their region, but have not banned waste exports from their continent to other developing countries. *See* LOUKA, *supra* note 26, at 51. *See* sources cited *supra* note 44.

[46] LOUKA, *supra* note 26, at 17-18.

[47] *Id.* at 30-31.

[48] *Id.*

not to provide land disposal.[49] Land disposal, even with restrictions, is the cheapest, and sometimes only, waste management method available.[50] Waste management industries, because of their potential in economies of scale, must also be able to provide more affordable waste management. By offering cheap waste management, the industry addresses the *static* dimension of wastes represented by waste generators. If waste disposal is cheap and effective, waste generators and especially the large, image-conscious chemical industries will consider the option of lawful behavior.

Because of their interest in lawful and sound waste management, corporate and especially waste management interests correspond with transnational interests.[51] This coincidence of interests arguably stems from the origins of the waste management industry. The waste industry is the product of national efforts to regulate waste disposal and it has to be responsive to those efforts.

4. Transnational Interests

Transnational interests take into account the scarcity of resources, scientific uncertainty, the practice of sectorial interests, and future survival. The adverse effects of waste substances on humans and the environment are uncertain.[52] Therefore, governments have not been willing to dedicate significant amount of resources to the enforcement of domestic and international regulations, especially those regarding waste reduction and recycling. At the international level, the rules articulated with specificity are the prior notification and informed consent requirement[53] and the prohibition of North-to-South waste shipments.[54] If these rules are violated, exporting countries must take the waste back[55] which is, as mentioned, a very costly operation. Notification, bans, and the "take-it-back" provision, it is hoped, would avert unsound waste transfers and reduce waste production. On the contrary, illegal waste transfers persist[56] because of the *static* dimension of waste and the increased costs of legal waste transfers, which are due to increased regulation. Thus, the prior notification and informed consent approach has not achieved the desirable reduction of illegal trafficking and waste production.

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[49] *Id.* at 28.

[50] *Id.*

[51] However, the waste management industry cannot totally identify with the interests of the world community because it does not concentrate on waste reduction, the ultimate goal of waste management. In fact, at first glance, the waste management industry seems at odds with waste reduction since it derives its profits from waste production. However, waste management industries, for multiple reasons, are not hostile to waste reduction without being aggressively in favor of it either. *See id.* at 32-33.

[52] *See supra* note 42 and accompanying text.

[53] Exporters of hazardous wastes should inform and acquire the informed consent of the importing country before transferring wastes.

[54] *See supra* note 34 and accompanying text.

[55] *See supra* note 41.

[56] *See Draft Law Will Control Solid Waste Flow in China*, Reuter Textline, Business Week (China Daily Supp.), Sept. 17, 1995, *available in* LEXIS, Nexis Library, Reuter Textline File.

However, an alternative method is available to manipulate the existing political commitment so as to enunciate more specifically transnational interests: concentration on the prevention of illegal dumping by providing appropriate economic incentives.[57] When legal disposal is cheap, compliance interests are arguably less apt to engage in illegal disposal. Therefore, land disposal should not be excluded as a waste management method and should become even cheaper by developing transnational facilities based on economies of scale. Transnational waste management facilities are facilities that will accept wastes not based on self-sufficiency considerations ("to each country or community its waste"), but on efficiency and effectiveness considerations. Such facilities are possible since waste management corporations have strong incentives to engage in sound waste management.[58] The waste management industry could also police waste generators since illegal trafficking will deprive it of profits. Eventually, however, a liability regime will be necessary to ensure compliance. Given enticements to comply followed by stringent penalties,[59] waste generators will be more likely to abide by international regulations. Such compliance will not demand a tremendous amount of resources, and therefore it is possible under the current level of political commitment.

Rather, the current reliance on expensive regulatory methods, instead of incentives, will increase the costs of disposal and will eventually exacerbate illegal dumping because of the *static* dimension of wastes. Illegal dumping will quadruple the number of disposal places and will create extreme uncertainty about their location. Exacerbation of illegal dumping will substantially jeopardize transnational interests by creating multiple unregulated waste sites. As analyzed, the minimum level of transnational interests involves prevention of unregulated disposal. Given the scientific uncertainty and the lack of resources, transnational interests cannot aim at waste reduction. They could, however, aim at illegal dumping reduction.

C. The Case of Ozone Depletion

As early as the 1970s, it was feared that certain substances called chlorofluorocarbons (CFCs)[60] incrementally destroy the ozone layer. As the scientific certainty was augmented,[61] and the effects and costs of ozone depletion were identified,[62] states decided to drastically curtail CFC production and consumption. The scientific certainty did not only bring together state interests, but also changed the stance of corporate interests. Corporate interests initially dismissed ozone depletion claims, but they had to accept eventually that the incontrovertible scientific evidence made future CFC production untenable.[63] Since only a small number of corporations are major CFC producers, it was easier to develop a consensus that it is better to produce alternatives to CFCs sooner than later. Corporate interests, fearful of losing their competitive advantage to developing countries, assisted in bringing about an agreement between developed and developing states.

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[57] *See generally* LOUKA, *supra* note 26.

[58] *See infra* part II.C.

[59] Penalties, in order to avoid an increase in the costs of enforcement, must be severe rather than frequent. Because of the *static* dimension of waste it will be very costly to frequently apprehend illegal waste traffickers.

[60] CFCs are substances with wide applications in thousands of products including refrigeration, air conditioning, air sprays, solvents, transportation, plastics, insulation, pharmaceutical, computers, electronics and fire-fighting. *See* BENEDICK, *supra* note 10, at 1. Except for CFCs, other substances that deplete the ozone layer include: methane, nitrogen oxide, bromine, methyl chloroform, and hydrochlorofluorocarbons. *See id.* at 12.

[61] *Id.* at 110-11.

Developing countries are not large CFC producers; however, due to their population, their future CFC production could be significant. CFC technology is cheap and simple. Thus it was very likely that CFC alternatives would not find willing customers in the Third World. Developing countries' CFC production would render a treaty for the protection of ozone layer inconsequential, and would destroy potential markets for CFC alternatives.[64] In order to sustain the viability of the treaty and the profitability of their industries, developed countries had to entice the participation of developing countries in ozone depletion regulation by providing financial incentives, and exceptions from the strict deadlines of the treaty.[65]

From the initial negotiating stages, the detrimental effects of ozone depletion to global human health and the environment, regardless of national boundaries, were not contested.[66] Therefore, it is difficult to identify local interests opposed to transnational interests. In the case of ozone depletion, a unique set of circumstances led to the adoption of an effective regime: the certainty about the threat, effects and potential costs of ozone depletion; and the possibility of comparatively inexpensive and effective regulation because of the absence of local interests and the restricted number of corporate interests. This unusual set of circumstances contributed to the transnational compromise of sectorial interests.

D. The Case of Deforestation

There are conflicting accounts on the extent of deforestation.[67] Claims of extensive deforestation have been considered hyperbolic extrapolations of evidence based on disparate forest definitions,[68] insufficient data,[69] and lack of a historical perspective on forest depletion.[70] But the divergent estimates on the extent of deforestation are accompanied by a consensus on the causes of deforestation. Logging is considered an indirect cause of deforestation. The roads left open by loggers provide landless cultivators with access to forests where they "slash and burn" in order to make the land suitable for agriculture and grazing.

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[62] For example, ozone depletion can have detrimental effects on human health (skin cancer, eye cataract, and possible suppression of the immune system). Major damage to agriculture is also suspected because many plant species are sensitive to UV-B radiation. *See id.* at 21, 63.

[63] *Id.* at 12, 111.

[64] *Id.* at 151.

[65] Adjustments and Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer, June 29, 1990, art. 5, 10, 30 I.L.M. 537 (1991) (entered into force Aug. 10, 1992) [hereinafter London Amendments].

[66] BENEDICK, *supra* note 10, at 22.

[67] SOLON BARRACLOUGH & KRISHNA GHIMIRE, THE SOCIAL DYNAMICS OF DEFORESTATION IN DEVELOPING COUNTRIES - DISCUSSION PAPER 16 (United Nations Research Institute for Social Development ed., 1990).

1. Corporate Interests

a. *Logging and Mining Interests*

Appropriate logging and management methods applicable to all forests are still elusive, because of the idiosyncrasies of different forest types. Logging methods, which could avert or diminish soil erosion and degradation, and enhance forest regeneration,[71] are often viewed as impractical[72] and costly at least in the short-term.[73] Similarly, silvicultural systems regarded as more environmentally sound than clear-cutting are considered expensive and are frequently abandoned.[74] A comparative examination of the implementation of different silvicultural systems demonstrates that clearcutting, despite its disadvantages,[75] because of its simplicity is the preferred logging method in both developed and developing countries.

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[68] ALEXANDER S. MATHER, GLOBAL FOREST RESOURCES 58 (1990).

[69] JACK WESTOBY, INTRODUCTION TO WORLD FORESTRY 90 (1989).

[70] *Id.*

[71] Methods to avoid unnecessary forest destruction due to logging include: avoidance of the use of heavy machinery; use of balloon and helicopter instead of road transportation for harvested wood; road reduction and revegetation; keeping logs off the ground; harvesting on frozen ground or snowpack; maintenance of litter layer and understory vegetation; maintenance of continuous tree roots on landslip-prone sites; avoidance of loss of litter layer by repeated burning at short intervals; special attention to land vegetation that is proximate to rivers, lakes or other bodies of water in order to reduce water pollution and sediment production. In this latter case, it is prescribed that land and vegetation at least 100 feet from the edges of waterflows should be protected. *See* 36 C.F.R. § 219.17(3) (1987). In general, buffer zones around stream channels are advocated as a sound management practice. It is proposed that water courses should be protected by buffer zones of natural vegetation of at least 15-20 miles and up to 30 miles wide. Another more controversial practice involves the application of chemicals that destroy undesirable species and allow for the growth of more commercial species. It is usually suggested that the use of chemicals should be minimized. For more details on logging practices, see Charles E. Russel, *Plantation Forestry Case Study No. 9: The Jari Project, Para, Brazil*, AMAZONIAN RAIN FORESTS: ECOSYSTEM DISTURBANCE AND RECOVERY 76, 78 (Carl F. Jordan ed., 1987) [hereinafter AMAZONIAN RAIN FORESTS]; L.S. Hamilton & A.J. Pearce, *Soil and Water Impact of Deforestation*, DEFORESTATION: SOCIAL DYNAMICS IN WATERSHEDS AND MOUNTAIN ECOSYSTEMS 75, 87-88 (J. Ives & D. C. Pitt eds., 1988) [hereinafter DEFORESTATION] (discussing methods of avoiding forest destruction); L.S. Hamilton, *Forestry and Watershed Management*, DEFORESTATION, *supra*, 99, 100; MATHER, *supra* note 68, at 229; JOHN D. MATTHEWS, SILVICULTURAL SYSTEMS 9, 25, 32, 47 (1989).

[72] Hamilton & Pearce, *Soil and Water Impact of Deforestation, in* DEFORESTATION, *supra* note 71, at 87.

[73] John Wyatt-Smith, *Problems and Prospects for Natural Management of Tropical Moist Forests*, NATURAL MANAGEMENT OF TROPICAL MOIST FORESTS 15 (Francois Mergen & Jeffrey R. Vincent eds., 1988); *see* A. Gomez-Pompa & F. W. Burley, *The Management of Tropical Natural Forests*, RAIN FOREST REGENERATION AND MANAGEMENT 3, 15 (A. Gomez-Pompa et al. eds., 1991) (discussing preservation of tropical natural forests).

Logging industries are not motivated to maintain the productivity of forested land. Most forests are government property and logging industries obtain logging rights under limited concession agreements.[76] On the other hand, the extent and impenetrability of forests and the limited financial resources curtail the enforcement capability of developing states. Even serious efforts to abate illegal logging to capture the undeclared profits of logging industries have not been very successful.[77] Logging industries have lately moved their operations to even more impoverished countries, for example, the Pacific islands. In those countries, local ownership and control over forest resources are prevalent,[78] and it is claimed that corporate interests manipulate local people and engage in unsustainable logging.[79] But even somewhat environmentally sensitized logging interests cannot dictate environmentally sound practices in vast forested areas where monitoring capability is limited. Commonly, for example, untrained workers left unsupervised in forests disregard corporate guidelines inclusive of more complex and labor-demanding harvesting techniques.[80]

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[74] Environmental groups usually dislike clearcutting and prefer other silvicultural systems, such as shelterwood, selection, or coppice systems because these systems mimic natural regeneration. However, clearcutting is not necessarily unsound and silviculturists maintain that sound logging practices are more important than the particular harvesting system applied. *See supra* note 71. Moreover, clearcutting could be followed by natural or artificial regeneration of uneven stands and thus imitate natural regeneration. Clearcutting is a monocyclic system and "[m]onocyclic systems . . . aim at a single comprehensive harvest of all marketable timber at the end of the next rotation, with reliance on seedling regeneration to form the next crop." On the contrary, "polycyclic systems involve the selective removal of a limited number of stems on two or more occasions over the full rotation cycle, thereby maintaining a less uniform stand of mixed ages, with reliance on advance regeneration for the next harvest." *See* CONSERVATION OF GENETIC RESOURCES IN TROPICAL FOREST MANAGEMENT: PRINCIPLES AND CONCEPTS FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS - PAPER 107, 26 (1993) [hereinafter FAO (biodiversity)]. Polycyclic systems could also have adverse environmental effects, especially because of the damage caused by the extraction of wood, and mostly in cases when the felling cycle is short. *See* Wyatt-Smith, *supra* note 73, at 13. Another disadvantage of polycyclic systems is that they are costly, and require more time and skill. For the advantages and disadvantages of different silvicultural systems adopted, see MATTHEWS, *supra* note 71, at 87-88, 91, 169. The experience with polycyclic systems in developing countries has not been especially encouraging. *See generally* NATURAL MANAGEMENT OF TROPICAL MOIST FORESTS, *supra* note 73 (discussing why silvicultural systems are abandoned).

[75] MATTHEWS, *supra* note 71, at 87-88.

[76] MATHER, *supra* note 68, at 104; *see* THEODORE PANAYOTOU AND SOMTHAWIN SUNGSUWAN, AN ECONOMETRIC STUDY OF THE CAUSES OF TROPICAL DEFORESTATION: THE CASE OF NORTHEAST THAILAND - DISCUSSION PAPER NO. 284 (Harvard Institute for International Development, March 1989) (discussing tropical deforestation). In some cases concession agreements are concluded illegally. Certain logging industries also engage in intimidating practices. In certain cases logging industries develop links with drug traffickers who see the forests as an ideal hiding place, and in deforested land, land suitable for drug crops. For example, contracts are often obtained by bribing officials in the high governmental echelons. In addition to bribes, other illegal tactics and violence are included on the menu of logging industry practices. *See* Philip Shenon, *"Last Rain Forest:" Timber vs. a Culture - A Special Report; In Isolation, Papua New Guinea Falls Prey to Foreign Bulldozers,* N.Y. TIMES, June 5, 1994, at 1. Some of the logging industries are also involved in illegal drug trade. *See Export Financing and Related Programs FY 95 Foreign Operations Appropriations,* Federal Document Clearing House, Congressional Testimony (1994) (testimony of Samuel M. Hitt, Director Forest Guardians House Appropriations/Foreign Operations) ("It should be noted that laundering of drug money through logging enterprises may finance logging operations in the most remote areas, despite market economics").

[77] According to a Greenpeace estimate exports of illegal timber from the Brazilian Amazon amount to $1.2 billion per year. *See* Graham Clayton, *Electronics Guard the Amazon,* SUN-

Plantations[81] increase forest cover and serve protective and productive functions, but they are not problem-free.[82] Plantations are expensive, and in developing countries often cost-ineffective.[83] In certain developing countries favorable climatic conditions have benefitted plantations.[84] Overall, however, evaluations of plantations are mixed.[85] It has also been argued that the extensive development of plantations will deprive the forest of its economic value and constitute another reason for its decimation.[86] Moreover, plantations are not always beneficial, especially in cases of afforestation. Studies have indicated that plantation projects should take place only after serious

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DAY TIMES, July 31, 1994, *available in* LEXIS, Nexis Library, Current News File. Malaysia and Indonesia are eager to curb illegal logging which consists primarily of exports of unprocessed logs. They try to restrict legal and illegal log exports and to develop a domestic wood processing industry, which can bring more profits than simple log exportation. Malaysia banned the export of logs from the state of Sebah, where illegal logging is rampant. Both countries are especially keen on surpassing Japan's wood processing industries in order to attract Japanese investment. *See Chainsaw Massacres*, ECONOMIST, June 25, 1994, at 39.

[78] MARCUS COLCHESTER & LARRY LOHMANN, THE TROPICAL FORESTRY ACTION PLAN: WHAT PROGRESS? 57 (1990).

[79] *South Pacific: The New Colonisers,* ECONOMIST, Aug. 6, 1994, at 32.

[80] Wyatt-Smith, *supra* note 73, at 14.

[81] MATHER, *supra* note 68, at 81-86. Plantations are inclusive of both afforestation and reforestation efforts. Afforestation involves the establishment of a forest on land not previously forested. Reforestation means the establishment of a forest on land from which it was previously removed. *See id.* at 58.

[82] Uniform plantations, plantations of only one species, are susceptible to attacks by disease and pests, and eventual decline due to the progressive exhaustion of soil nutrients. *See* WESTOBY, *supra* note 69, at 39; L. Chelunor Nwoboshi, *Regeneration Success of Natural Management: Enrichment Planting and Plantations of Native Species in West Africa,* NATURAL MANAGEMENT OF TROPICAL MOIST FORESTS, *supra* note 73, at 71, 81 (discussing uniform plantations); P.R.O. Kio & S.A. Ekwebelam, *Plantations Versus Natural Forests for Meeting Nigeria's Wood Needs*, Natural Management of Tropical Moist Forests, *supra* note 73, at 149, 160 (discussing plantations in Nigeria).

[83] Russel, *supra* note 71, at 76.

[84] *See* Roger A. Sedjo, *Forest Plantations of the Tropics and Southern Hemisphere and Their Implications for the Economics of Temperate Climate Forestry*, SYSTEMS ANALYSIS IN FORESTRY AND FOREST INDUSTRIES 55 (M. Kallio, et al. eds., 1986); WESTOBY, *supra* note 69, at 113 (discussing climatic conditions in developing countries).

[85] *See* Sedjo, *supra* note 84, at 55.

[86] PLANTATION POLITICS (Caroline Sargent & Stephen Bass eds., 1992).

consideration.[87] The same holds true when natural forests or long-established ecosystems are removed to make room for plantations, usually of exotic and more commercial species.[88] However, plantations on deforested and degraded lands are viewed as an environmental inoculation.[89] In the European Union, the agricultural surpluses have compelled a reconsideration of plantations, and forestry in general, as an alternative type of land use.[90] However, overly optimistic prognostications on the role of plantations in developing countries have been dismissed as oblivious of the social causes of deforestation: the invasion of landless populations into the forest in search of space for agriculture and grazing.[91]

Logging interests are at odds with local and state interests. This is especially true when illegal logging deprives local and state interests of their share of profits from forest resources. Logging interests may, however, forge temporary alliances with state and local interests when state and local interests favor the exploitation of forest resources. The same is true of the mining and petroleum industries despite the adverse effects of mining and oil exploration on forests.[92]

b. *Food and Pharmaceutical Interests*

Those in the food and pharmaceutical industries are the only corporations whose interests could rival those of the logging industries. Because food and pharmaceutical industries profit from biodiversity resources, they could view forests as a valuable asset. However, due to the hurdles of biodiversity protection, the attitude of these industries is not unconditionally pro-forest preservation.

Forest reserves for the protection of biological diversity exist in most countries. Contrary to prevalent perceptions, developing countries have devoted extensive areas of their territory for conservation purposes.[93] Most reserves, however, are inadequately monitored, and they are encroached by local populations who view them as an arbitrary violation of their natural rights to utilize forest resources.[94] Sometimes local populations purposefully destroy reserved forests to demonstrate their discontent with the regulations of the central government.[95] In this spirit, it has been proposed that forest reserves should include both a core protected area[96] and buffer zones. Some sort of forest management would be allowed in the buffer zones.[97]

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[87] *See generally* ECOLOGICAL EFFECTS OF AFFORESTATION (Charles Watkins ed., 1993) [hereinafter AFFORESTATION] (discussing reforestation in relation to deforestation). Reforestation in order to remain faithful to its definition has to occur immediately after deforestation. This is because cleared areas left for a year or more tend to become covered by weeds and woody species. The condition of the soil also deteriorates; dry soil becomes drier and wet soils become more swampy. *See* MATTHEWS, *supra* note 71, at 71.

[88] *See* AFFORESTATION, *supra* note 87.

[89] Sedjo, *supra* note 84; MATHER, *supra* note 68, at 87; *see* Frank H. Wadsworth, *Production of Usable Wood from Tropical Forests*, *in* ECOSYSTEMS OF THE WORLD: TROPICAL RAIN FOREST ECOSYSTEMS 279 (1983) (discussing ecosystems of plantations).

[90] Charles Watkins, *Forest Expansion and Nature Conservation*, *in* AFFORESTATION, *supra* note 87, at 1, 2; FORESTRY POLICIES IN EUROPE FOOD AND AGRICULTURE ORGANIZATION - FORESTRY PAPER 93, 3 (1989).

[91] *See generally* WESTOBY, *supra* note 69 (discussing social aspects of deforestation).

[92] *See, e.g.*, Gilles Castonguay, *Colombia's Pacific Rainforest Faces Extinction*, Reuters, Aug. 23, 1994, *available in* LEXIS, Nexis Library, Current News File; John Otis, *Ecology v. Business on Shores of Honduras*, SAN FRAN. CHRON., Aug. 8, 1994, at A9, *available in* LEXIS, Nexis Library, Current News File; Geoff Spencer, *Only Six Decades Away from Stone Age, Islanders Trade Fax Numbers*, L.A. TIMES, July 24, 1994, at A6, col. 1, *available in* LEXIS, Nexis Library, Current News File; *see* COLCHESTER & LOHMANN, *supra* note 78 (discussing adverse effects of mining and oil exploration).

Easily prescribed local participation has not materialized. Efforts to include local communities in forest management have been unsuccessful. Attempts, for instance, to render tourism the principal source of revenue have not been as profitable as expected.[98] Tourism rarely renders profits for local communities.[99] At other times, prescriptions for local participation in forest management are simply neglected. Local residents are chased away from forests largely to no avail.[100] Forest preservation is equally challenging from a technical perspective.[101] *Ex situ* forest conservation (e.g., seed banks) can also be complicated and expensive, and is regarded as inadequate since it cannot be applied to numerous tree species with significant potential for breeding operations.[102]

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[93] *See, e.g.*, R.H.V. Bell, *Conservation with a Human Face: Conflict and Reconciliation in African Land Use Planning*, CONSERVATION IN AFRICA: PEOPLE, POLICIES AND PRACTICE 79, 87 (1987) [hereinafter CONSERVATION IN AFRICA].

[94] *Id.*

[95] *See generally* Bell, *supra* note 93 (discussing modern approaches to forest reserves); FAO (biodiversity), *supra* note 74 (discussing economic incentives for forest reserves).

[96] FAO (biodiversity), *supra* note 74, at 41.

[97] *See id.* at 44. "Corridors" of natural forest could also be established that would link the natural forest with disturbed forests or clearcut areas so as to provide possibilities for species migration and regeneration. Eventually, since protected areas constitute only a small part of most countries territory, the most desirable alternative seems to be "a planned mosaic of Protected Areas with production forests" managed in a fashion that will contribute to forest conservation and sound management. More specific categories of forest reserves have been proposed: strict natural reserves (in totally undisturbed condition); national parks (where scientific, educational and recreational uses are allowed); managed natural reserves (where conservation is the primary concern while harvesting could be allowed); and multiple-use management areas (well-protected areas where continued use of forest resources by locals is allowed). FAO has proposed the establishment of Biosphere Reserves, where both development and conservation are allowed, and World Heritage Sites that may qualify for financial assistance through the World Heritage Fund. Other sub-divisions of forest reserves combining conservation and development in different proportions have been proposed by other national and international organizations along the lines of the above categories. *See* ITTO GUIDELINES ON THE CONSERVATION OF BIOLOGICAL DIVERSITY IN TROPICAL PRODUCTION FORESTS 5, 17-18 (ITTO Policy Development ed., 1993); FAO (biodiversity), *supra* note 74, at 41-42; MANAGING GLOBAL GENETIC RESOURCES 80-82 (National Academy of Sciences ed., 1991); OTA, TECHNOLOGIES TO SUSTAIN TROPICAL FOREST RESOURCES 163 (1984) [hereinafter OTA-TROPICAL].

[98] *See* Bell, *supra* note 93, at 94; *see also* Norman Myers, *Conservation of Rain Forests for Scientific Research, for Wildlife Conservation, and for Recreation and Tourism*, ECOSYSTEMS OF THE WORLD: TROPICAL RAIN FOREST ECOSYSTEMS, *supra* note 89, at 325, 332 (discussing tourism).

[99] Steven R. Brechin et al., *Resident Peoples and Protected Areas, A Framework for Inquiry*, *in* RESIDENT PEOPLES AND NATIONAL PARKS: SOCIAL DILEMNAS AND STRATEGIES IN INTERNATIONAL CONSERVATION 5, 20 (Partick C. West & Steven R. Brechin eds., 1991).

[100] Mahesh Uniyal, *India-Environment: Nomadic Herders Are Being Made Scapegoat*, Inter Press Service, July 21, 1994, *available in* LEXIS, Nexis Library, Current News File; Carlos Castilho, *Not in Your Backyard*, WORLD PAPER, Aug. 1994, at 6, *available in* LEXIS, Nexis

In general, the conservation of biodiversity is not an easy enterprise. Conservation of biodiversity is costly, often cumbersome for developing countries, and at present rudimentary. It is an overstatement to contend that food and pharmaceutical corporations, which could potentially benefit from biodiversity protection, are eager to conduct now, or in the near future, large-scale experiments to decipher the worth of billions of species.[103] Besides, even if it is assumed that such experiments are feasible, they will be executed on different levels from present-day species because of the extinction and evolution of species over time.[104] Currently food and pharmaceutical indus-

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Library, Current News File. Excluding peoples from forests started during colonialism. *See* Ramachandra Guha, *Fighting for the Forest: State Forestry and Social Change in Tribal India*, THE RIGHTS OF SUBORDINATED PEOPLES 20, 22-23 (Oliver Mendelsohn & Upendra Baxi eds., 1994) [hereinafter SUBORDINATED PEOPLES].

[101] *See* MANAGING GLOBAL GENETIC RESOURCES, *supra* note 97. More specifically, trees (and especially tropical tree species) may need larger reserves since genes are not distributed randomly in a tree population. Ideal shape and size estimates of in situ forest conservation sites have been criticized as arbitrary compromises "between scientific best guesses" and what is deemed "politically feasible." Recently it has been proposed that even small reserves (less than 10 hectares) could be effective for biodiversity purposes. An advantage of smaller reserves is that they are more manageable. *See* OTA-TROPICAL, *supra* note 97, at 163; FAO (biodiversity), *supra* note 74, at 42; WESTOBY, *supra* note 69, at 167.

[102] It has been proposed that a global data base on the status of tree genetic resources must be created and must be continuously updated. The data base should include conservation activities, breeding programs and seed banks. It has also been proposed that an international institution should be in charge of the conservation and management of forest resources. For example, the FAO could probably be assisted by the International Board for Plant Genetic Resources (IBPGR).

Tree plantations need much more time and space to develop than other plantations. Some species seeds could ideally be stored in seed collections for decades, but most seed collections are mismanaged, and their standards of maintenance are poor. Some seeds are desiccation intolerant—cannot survive the removal of moisture or low temperature. This has prompted experimentation with alternative methods of seed conservation. Such methods are tissue culture and cryogenic storage. *See* MANAGING GLOBAL GENETIC RESOURCES, *supra* note 97, at 13, 86-87, 129.

[103] Sang Park, *Biodiversity Prospecting: Pharmaceutical Investment in Costa Rica*, XVII HARV. INT'L. REV. 52, 53 (Spring 1995). Although the agreement between Merck (a pharmaceutical company) and Costa Rica "promises royalties, the possibilities of producing commercially successful drug is still very low: roughly one in 10,000 chemicals shows promise, and in general only a fourth of these ever become commercial drugs." *Id.*

[104] Julian L. Simon & Aaron Wildavsky, *On Species Loss, the Absence of Data, and Risks to Humanity*, THE RESOURCEFUL EARTH: A RESPONSE TO GLOBAL 2000, 171, 180 (Julian L. Simon & Herman Kahn eds., 1984) [hereinafter THE RESOURCEFUL EARTH]. It should be taken into account that evolution without extinction is not possible. Without extinction, biodiversity will increase exponentially. As a result the system will saturate and there will be no room for new species. *See* DAVID M. RAUP, EXTINCTION: BAD GENES OR BAD LACK? 19 (1991).

tries derive their knowledge of the therapeutic, cosmetic,[105] and nutrition properties[106] of exotic plants from the practices of indigenous peoples, reflecting financial constraints for more extensive research.[107] Moreover, pharmaceutical industries do not concentrate on the discovery of medicines from the rainforest. Instead, the bulk of research in pharmaceutical industries is centered on the development of synthetic drugs by using traditional or new technologies.[108] Moreover, the profits of some pharmaceutical industries, while substantial by themselves,[109] are not compatible with the profits of the timber sector.[110]

Despite their potential for contribution to deforestation prevention, food and pharmaceutical industries are deplored for altering the lifestyles of indigenous peoples by inducing dependency on the exportation of exotic substances.[111] It has been argued that the development of extractive reserves—areas of the forest dedicated to extraction of useful plants—has rendered local populations dependent on the revenues from the forests, has eroded their culture, and depleted resources.[112] When the substances found in the forest become popular, the demand for them increases. Thus, unless the substances are cultivated commercially, the resources will be depleted. However, commercial cultivation makes the extractive reserve obsolete and the substances extracted from it too expensive to compete with substances produced commercially.[113] Pharmaceutical companies have also been able to synthesize substances found in the wild and dispense with natural supplies.[114] As a result, the local populations in the forest become unemployed and, gradually, part of society's lower class.

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[105] Jason Clay, *Buying the Forests*, CONSERVATION OF NEOTROPICAL FORESTS 400 (Kent H. Redford & Christine Padoch eds., 1992) [hereinafter NEOTROPICAL FORESTS].

[106] For example, the Ben and Jerry's rainforest crunch ice-cream. *See id.* at 411. It has also been maintained that wild plants could—with the help of biotechnology or traditional methods of breeding—enhance the nutritional value of many foods. *See* Winona Laduke, *War of the Rices*, *in* STATE OF PEOPLES: A GLOBAL HUMAN RIGHTS REPORT ON SOCIETIES IN DANGER 40, 40-45 (Marc S. Miller ed., 1993) [hereinafter STATE OF PEOPLES].

[107] Ed Dravo, *Java Jive*, FINANCIAL WORLD, Aug. 16, 1994, at 78, *available in* LEXIS, Nexis Library, Current News File (noting that Shaman Pharmaceutical—a company that sends ethnobotanists to developing countries to collect chemically active plants used by local healers—has not made substantial discoveries and consequently substantial profits). Moreover, it is doubtful whether forests contain exotic plants that could provide substances in addition to the those already discovered by indigenous peoples and currently used. Such substances include aspirin, steroids, digitalis, quinine, vincristine, marijuana, and curare. *See* CHRISTOPHER JOYCE, EARTHY GOODS: MEDICINE HUNTING IN THE RAIN FOREST (1994) (Book Review, ECONOMIST, Oct. 1, 1994, at 113) [hereinafter EARTHY GOODS].

[108] David Pearce, *An Economic Approach to Saving the Tropical Forests*, ECONOMIC POLICY TOWARDS THE ENVIRONMENT 239, 251 (Dieter Helm ed., 1991). The author states:

> The role of substitutes for plant-based drugs is thus crucial. Many modern drug manufacturers tend to focus more on the production of synthetic drugs using recent advances in molecular biology and biotechnology. Put another way, their willingness to pay for the retention of tropical forests as repositories of potential pharmaceutical could be very low.

Id.

[109] *Scrambles of Plants by Western Companies Revealed*, Xinhua News Agency, Aug. 22, 1994, *available in* LEXIS, Nexis Library, Current News File; Nick Gilbert, *1-800-22 ETHIC*, FINANCIAL WORLD, Aug. 16. 1994, at 20, *available in* LEXIS, Nexis Library, Current News File.

[110] Keith Henderson, *Ecologists Debate Merits of Rain-Forest Products*, CHRISTIAN SCI. MONITOR, Aug. 3, 1994, at 1, *available in* LEXIS, Nexis Library, Current News File.

[111] *Id.*

[112] *See generally Non-timber Products from Tropical Forests: Evaluation of the Conservation and Development Strategy*, *in* 9 ADVANCES IN ECONOMIC BOTANY (Daniel C. Nepstad & Stephan Schwartzman eds., 1992) (discussing extractive reserves).

The only interests that are capable of deterring the logging interests do not display a willingness to protect biodiversity independent from immediate financial returns. In practice, food and pharmaceutical interests are not easily discernible from other developmental interests. They could easily favor plantations of two or three useful species even if that would entail the elimination of a more diverse forest. When biodiversity resources are placed on a cost-benefit scale, their protection could be defeated by the single-minded preoccupation with the protection of the known useful resources to the detriment of the unknown and presumably less useful ones. The commoditization of biodiversity in order to protect it in a society with monetary modes of evaluation cannot involve protection of all biodiversity resources. In the absence of definitional criteria of a biodiversity protection optimum, the amount of biodiversity protected will inevitably dwindle. Consequently, a more likely future scenario will be a replication of the existing one: increasing restriction of biodiversity preservation areas and productive use of the rest of the forest.

State and local interests are supportive of pharmaceutical interests if they receive a portion of their profits.[115] The Biodiversity Convention[116] proclaims state sovereignty[117] over biodiversity resources. It provides also that the knowledge of indigenous populations should be used only with their approval, and that they should receive an equitable share of the benefits from the application of such knowledge. But the Biodiversity Convention does not specify formal means of approval or the contours of equitable sharing.[118] Therefore, until now, industries obtain biological materials either free of charge[119] or on a contractual basis. Developing countries still claim that industries should be more willing to share the profits from biodiversity resources.[120]

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[113] For example, the production of rubber in the Brazilian Amazon ceased to be profitable after rubber plantations were developed in Asia and especially after the production of synthetic rubber. Today the extractive reserves of rubber in the Amazon are supported by government subsidies. *See* John O. Browder, *Social and Economic Constraints on the Development of Market-Oriented Extractive Reserves in Amazon Rain Forests*, 9 ADVANCES IN ECONOMIC BOTANY, *supra* note 112, at 33.

[114] EARTHY GOODS, *supra* note 107. ("When yew trees yielded a potent cancer drug called taxol and appeared to justify the protection of old-growth forest in the Pacific north-west, it took Bristol-Myers only a few years to learn how to synthesize taxol rendering wild supplies unnecessary.").

[115] For different viewpoints regarding ownership and apportionment of profits from biodiversity resources, see generally SEEDS AND SOVEREIGNTY: THE USE AND CONTROL OF PLANT GENETIC RESOURCES (Jack K. Kloppenburg ed., 1988) [hereinafter SEEDS AND SOVEREIGNTY].

[116] Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 [hereinafter Biodiversity Convention].

[117] Biodiversity Convention, *supra* note 116, art. 15(1), 31 I.L.M. at 828. State sovereignty over biodiversity resources is a relatively new concept. Until very recently, biodiversity resources were considered the common heritage of mankind. For an insightful discussion of the advantages and shortcomings of a national sovereignty regime versus a common heritage of mankind regime, see SEEDS AND SOVEREIGNTY, *supra* note 115.

2. Local Interests

It has been repeatedly asserted that excessive logging is not at the root of deforestation. The roads carved open by loggers provide an invitation to landless cultivators[121] to invade the forest. In the forest, loggers "slash-and-burn" to prepare the land for agriculture or grazing.[122] These societal causes of deforestation have altered the remedy prescribed for its cessation which now involves not only discontinuation of logging, but also land reform and integration of forestry into the general context of land use.[123] The social origins of deforestation are also evident when local inhabitants are excluded from forest reserves. Exclusive reserves are unsuccessful because local people perceive them as hostile governmental acts attempting to deprive them of their rights to forest.[124] Thus, exclusive reserves have been either abandoned or become excessively burdensome to monitor.[125] The traditional analysis of local interests in the context of deforestation underlines their opposition—the interests of indigenous peoples are often described as antithetical to those of landless peasants. Indigenous peoples that live in the forest in harmony with the environment are hampered by the slash-and-burn practices of landless peasants and ranchers. But this alleged opposition between indigenous peoples and peasants is frequently inaccurate. It is not unusual for indigenous peoples—the "hunters-and-gatherers" that live in the forest—and peasants to maintain a symbiotic relationship by mutually supplementing their resource base. Contrary to prevalent perceptions, indigenous peoples do not always live in harmony with their environment. Under situations of stress, indigenous people, like all humans, can exploit a resource to the point of depletion.[126] The romantic image of indigenous peoples living in harmony with nature[127] has created many misconceptions that have jeopardized the survival of indigenous groups.[128] Indigenous peoples have often resisted logging and mining industries' invasion into the forest. However, often times, they have welcomed the changes these industries have brought with them.[129] Cooperation between the indigenous and immigrant populations has altered the lifestyles of indigenous peoples. In some cases indigenous peoples have become dependent on the market or social welfare with dire consequences for social cohesion.[130] Environmentalists consider such indigenous groups co-opted.[131] Environmental groups often conceive indigenous

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[118] Biodiversity Convention, *supra* note 116, art. 8(j), 31 I.L.M. at 826.

[119] Wilkes, *Plant Genetic Resources over Ten Thousands Years: Form a Handful of Seed to the Crop-Specific Mega-Gene Banks*, SEEDS AND SOVEREIGNTY, *supra* note 115, at 67, 77.

[120] There are rumors that corporations often smuggle biodiversity resources out of developing countries. *See Scrambles of Plants by Western Companies Revealed*, Xinhua News Agency, Aug. 22, 1994, *available in* LEXIS, Nexis Library, Current News File.

[121] There are 200 million shifting cultivators all over the world. *See* APPROPRIATE FOREST INDUSTRIES FOOD AND AGRICULTURE - ORGANIZATION PAPER 68, 25 (1986).

[122] *See* WESTOBY, *supra* note 69, at 44; MATHER, *supra* note 68, at 248; FAO (biodiversity), *supra* note 74, at 16, 49 (describing slash-and-burn).

[123] *See, e.g.*, Wyatt-Smith, *supra* note 73; *see* WESTOBY, *supra* note 69 (describing reaction of local people). In Sierra Leone, the military government decided to evict squatters from government land around the capital. As a consequence, squatters have taken up the hills and slashed down vegetation in order to build up homes. The government subsequently promoted a plan to combat deforestation. *See Sierra Leone Environment: Tackling Deforestation*, Inter Press Service, July 25, 1994, *available in* LEXIS, Nexis Library, Current News File.

[124] FAO (biodiversity), *supra* note 73, at 42-43; WESTOBY, *supra* note 69, at 63; W.K. Lindsay, *Integrating Parks and Pastoralists: Some Lessons from Amboseli*, *in* Conservation in Africa, *supra* note 93, at 149.

[125] *See, e.g.*, Bell, *supra* note 93.

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126. *See* Kent H. Redford, *Hunting in Neotropical Forests: A Subsidy from Nature*, 13 TROPICAL FORESTS: PEOPLE AND FOOD 227 (C. M. Hladic et al. eds., 1993) [hereinafter TROPICAL FORESTS]. Indigenous communities are also not necessarily egalitarian. *See* John D. Speth, *Seasonality, Resource Stress, and Food Sharing in So-Called "Egalitarian" Foraging Societies*, 9 JOURNAL OF ANTHROPOLOGICAL ARCHAEOLOGY 148 (1990). The author questions whether the act of sharing, prevalent in indigenous groups, implies equity in the nutritional benefits. Skilled hunters are likely to be better nourished than unskilled ones. Women and children tend to be undernourished. *Id.*

127. Redford, *The Ecologically Noble Savage*, 15 CULTURAL SURVIVAL QUARTERLY 43 (1990); *see* Brian Spooner, *Insiders and Outsiders in Baluchistan: Western and Indigenous Perspectives on Ecology and Development*, LANDS AT RISK IN THE THIRD WORLD: LOCAL-LEVEL PERSPECTIVES 58, 64 (Peter D. Little et al. eds., 1987); Brechin et al., *supra* note 99, at 5; Hillard Kaplan & Kate Kopischke, *Resource Use, Traditional Technology, and Change Among Native Peoples of the Lowland South America*, NEOTROPICAL FORESTS, *supra* note 105, at 83, 104. The Ache have little interest in resource conservation. They regularly destroy honey-producing beehives, cut down fruiting trees, and wipe out whole monkey troops. Kaplan & Kopischke NEOTROPICAL FORESTS, *supra* note 105, at 83, 104.

128. Romantic images of primitivity have been used to keep indigenous peoples in their place. *See* MARC S. MILLER, A GLOBAL HUMAN RIGHTS REPORT ON SOCIETIES IN DANGER 102 (Cultural Survival ed., 1993).

129. *See* Spencer, *supra* note 92, at A6. Demands of indigenous people in Honduras do not include isolation. They include minimum wage, development programs and routes to transport their products. *See Honduras-Human Rights: Congress to Create Indigenous Reserve*, Inter Press Service, July 14, 1994, *available in* LEXIS, Nexis Library, Current News File.

130. CASH COMMODITIZATION AND CHANGING FORAGERS (Peterson N. & Matsuyama T. eds., 1991).

131. Such an approach seems to be prevalent even in groups that claim to be supportive of indigenous peoples' right to self-determination. *See* Samuel F. McPhetres, *Chamorros and Carolinians of the Northern Mariana Islands*, STATE OF PEOPLES, *supra* note 106, at 102. The author states:

> The indigenous peoples of the Marianas won't go back to grass shacks and communal property, or trade canned fish. . .for a diet of hard-caught fish and breadfruit. But what they must decide is what aspects of their culture they want to preserve to maintain a distinct identity. First the desire to preserve a cultural identity must be established. Second a realistic inventory of traditions must be taken.

Id. The author does not explain why the indigenous people *must* decide what aspects of their culture they want to preserve or why a desire to preserve cultural identity *must* be established.

interests as an inextricable part of the protected landscape, part of the environment to be protected from the invasive first-world development.[132] But preaching isolation in a world that becomes increasingly smaller will not help indigenous groups to cope with the changes introduced in their environment.

Moreover the strict distinction between peasant and indigenous groups may create false dichotomies since it does not take into account the larger number of groups of mixed people (called *caboclos/riberenos* in Amazonia)[133] who could be considered neither indigenous nor peasant and who live in poverty at the outskirts of the forests.[134] These people are not considered exotic enough to be protected and the abuse of their rights often goes unnoticed.

3. State Interests

Developing states with the richest in biological diversity forests consistently oppose international forest regulation. They claim that forests are a national resource and that international regulation of forest resources violates national sovereignty.[135] This is a legitimate claim since forests are interrelated with other land use alternatives, especially agriculture. Governments, politically constrained to enact land reforms[136] and pressed by landless populations, are disinclined to devote a special area of their land to permanent forest cover. This is especially true since some tropical forest land is suitable for agricultural use.[137] State governments aspiring to re-election are not inclined to enact reforms that may save forest resources but equal political suicide. These governments overwhelmed by pressing economic problems are prone to neglect comprehensive or long-term approaches. States tend to per-

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Indigenous groups should be free *like everybody else* to shed off cultural practices they do not wish to keep them. *Id.*

[132] *See, e.g.*, David Anderson & Richard Grove, *The Scramble for Eden: Past, Present and Future in African Conservation*, CONSERVATION IN AFRICA, *supra* note 93, at 1, 2-3, 7. The coalition between tribals and conservationists breaks down when the tribals adopt modern technology. In Peru, for instance, tribes are allowed to stay in protected areas as long as they hunt with bow and arrow and not by guns. In Costa Rica, agriculture in the Cahuita National Park is allowed as long as traditional methods of work do not change. *See* Brechin et al., *supra* note 99, at 5.

[133] Mario Hiraoka, *Caboclo and Ribereno Resource Management in Amazonia*, NEOTROPICAL FORESTS, *supra* note 105, at 134.

[134] Brechin et al., *supra* note 99, at 6. Because the distinction between indigenous and other peoples is often difficult and may result in inequities, the author decided to use the term "resident peoples" rather than "indigenous peoples" in the title and throughout the book. *See also* Darrell A. Posey, *Interpreting and Applying the Reality of Indigenous Concepts*, NEOTROPICAL FORESTS, *supra* note 105, at 21, 32 (discussing indigenous concepts).

[135] *See* Letter from the representatives of Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela to the United Nations addressed to the Secretary-General. A/CONF.151/PC/123 (Feb. 24, 1992).

[136] *See, e.g.*, David Driesen, *Brazil's Transition to Democracy: Agrarian Reform and the New Constitution*, 8 WIS. INT'L L.J. 150, 154-158 (1990).

[137] *See, e.g.*, Wyatt-Smith, *supra* note 73, at 19; *Permanent Plots for Agriculture and Forestry: Case Studies 5-8*, AMAZONIAN RAIN FORESTS, *supra* note 71, at 58; WESTOBY, *supra* note 69, at 160.

ceive forests as obstacles to communication, trade,[138] and national security,[139] and do not hesitate to divert funds from forestry to other purposes.[140]

States which export tropical wood or tropical wood products should be more preservationist because of the economic implications of forest depletion. Given the possibility of plantations and the perceived abundance of forest resources, however, conservation is not at the top of most states' agendas.[141] States, for obvious reasons, are earnest to abate illegal logging. However, efforts to stop illegal logging do not necessarily signify state alignment with transnational interests. Legitimate interests can decimate the forest as savagely as illegitimate interests. Besides, even zealousness to preserve the forests would be effectively crippled without monitoring and enforcement measures that could be quite demanding in vast forest areas. States which export other wood do not have incentives to protect the forests for the tropical wood *per se* since tropical wood competes with their own wood exports. Therefore, measures they propose for the protection of tropical forests could justifiably be interpreted as protectionist.

Conflicting information exacerbates state inertia. The evidence of worldwide deforestation, as mentioned above, has been repeatedly questioned.[142] In fact, it has been reported that in countries reputable for high levels of forest destruction, deforestation has decreased.[143]

State interests relate to logging interests as long as logging and wood-processing industries bring them substantial profits.[144] State interests, however, would clash with logging interests when logging deprives them from the exploitation of their own resources. State interests may coincide with pharmaceutical interests when the exploration of such interests is profitable. However, the hardships entailed in enforcing property rights on biodiversity resources have not helped to reconcile state and corporate interests. Besides, pharmaceutical industries specializing in exotic plants, active in the Third World, are multinational enterprises. In developing economies, their profitability is not as essential as the promotion of local capital in, for example, domestic wood processing industries.

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[138] *Business and the Environment: Uniting the Americas - A Look at Controversial Plans to Complete a Highway Linking Columbia to Panama*, FINANCIAL TIMES, July 20, 1994, at 18, *available in* LEXIS, Nexis Library, Current News File.

[139] David Maybury-Lewis, *From Savages to Security Risks: The Indian Question in Brazil*, *in* SUBORDINATED PEOPLES, *supra* note 100, at 138.

[140] *Indonesian NGOs to Sue State over Reforestation Fund*, Japan Economic Newswire, Aug. 23, 1994, *available in* LEXIS, Nexis Library, Current News File.

[141] Needless to say, the latest price increase in tropical timber will exacerbate deforestation. *See Chainsaw Massacres*, *supra* note 77, at 39.

[142] *See* MATHER, *supra* note 68; Norman Myers, *Tropical Moist Forests: Over-Exploited and Under-Utilized*, 6 FOREST ECOLOGY AND MANAGEMENT 59 (1983); Roger A. Sedjo & Marion Clawson, *Global Forests*, THE RESOURCEFUL EARTH, *supra* note 104, at 128 (examining evidence regarding current rate of deforestation and long-term prognosis).

[143] One expert noted:

> The present rate of deforestation in tropical forests of the Brazilian Amazon has fallen (circa 1992-1993) to approximately 11,000 km^2/yr. This means that the deforestation rate there is about 0.3%/year. By comparison, most National Forests in the United States are logged at a rate of about 1% a year.

House Foreign Affairs/Western Hemisphere Affairs Indigenous People of Brazil, Federal Document Clearing House (1994) (testimony of Dr. Compton Tucker, National Aeronautics and Space Administration). *See* Senthil Ratnasabapathy, *Developing Countries Benefit from Space Technology*, Inter Press Service, June 20, 1994, *available in* LEXIS, Nexis Library, Current News File.

[144] In the Solomon Islands timber exportation constitutes 50% of total government revenues. *See Cause for Concern Behind the South Pacific Smiles*, FINANCIAL TIMES, Aug. 4, 1994, at 3, *available in* LEXIS, Nexis Library, Current News File.

State interests may condone local interests in order to avoid social upheaval or conflict. Incursions of landless populations into the forest and forest exploitation by adjacent communities may be tolerated as the inevitable result of social ills. Furthermore, some states have attempted to include local groups in forest reserve management.[145] States, however, rarely identify with local interests to the extent of land redistribution or substantial protection of the lifestyles of indigenous populations. States cannot devote extensive resources to forest protection because they are overwhelmed by other issues. In fact, states view forests as a financial means for resolving temporarily other pressing issues.

4. Transnational Interests

According to the current environmental policies, transnational interests consist of prevention of total eradication of biodiversity. The lack of effective enforcement of international agreements[146] dealing with biodiversity is evidence that states are not committed to a more forceful protection of biodiversity resources. Transnational interests for biodiversity protection are at the threshold level rather than at the maximum level.

Biodiversity protection claims have been based on aesthetic and ethical grounds. Profit-seeking industries, and the inability of these claims to convince impoverished states and populations have promoted another rationalization of biodiversity protection. It is frequently claimed that biodiversity is valuable for human survival because of the potential of exotic plants for use as food and drug production. Forests' ability to act as sinks for greenhouse gases is also proposed as an incentive for the cessation of deforestation. It could be easily counter-proposed that decreasing emissions or increasing reforestation in temperate regions is a more desirable method to reduce greenhouse gases. Forests in temperate regions could be as diverse as those of tropical regions.[147] Some claim that it is too late to reverse climate change, or that its effects will not be globally pernicious and that institutional adaptation may be the optimal solution.[148] The threat of overpopulation adds to the urgency of biodiversity protection because biological diversity can be manipulated by biotechnology and can contribute to an increase in food production. But this is again a utilitarian defense of biodiversity, which cannot currently justify the preservation of more than a restricted number of species. Given the urgent needs of developing countries, some biodiversity resources have and will continue to be sacrificed in order to alleviate immediate human needs. Therefore, it may be unrealistic and practicably impossible to preserve all biodiversity. On the other hand, not all developmental activities should be conceived as detrimental to biodiversity protection. Logging operations and moderate slash and burn agriculture may actually favor the protection of "useful" biodiversity resources.[149]

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[145] *See supra* note 96 and accompanying text.

[146] *See, e.g.*, Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243; Convention on the Conservation of Migratory Species and Animals, June 23, 1979, 19 I.L.M. 15; Convention on the Conservation of European Wildlife and Natural Habitats, E.T.S. No. 104, Sept. 19, 1979; Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T. 3918, T.I.A.S. No. 8409; Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Feb. 2, 1971, 996 U.N.T.S. 245; Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, Oct. 12, 1940, 56 Stat. 1374, 161 U.N.T.S. 193; African Convention on the Conservation of Nature and Natural Resources, Sept. 15, 1968, 1001 U.N.T.S. 3.

Transnational interests at a maximum level would favor the protection of as many as possible biodiversity resources. Due to the prevailing poverty in the developing world, however, transnational interests favor the protection of biodiversity that is compatible with the *modus vivendi* of local populations and will certainly abrogate protection of biodiversity that may induce more poverty in the present for the sake of the future. Transnational interests are also in favor of a more arduous protection of biodiversity in privileged regions, for example Europe, where the pressures on land are not that strong, and the agricultural surpluses are many.

II. THE FUNCTIONS

The remaining sections will investigate the incorporation of sectorial and transnational interests into international legislation. The incorporation discloses the three functions of international environmental law: normative, discursive, and promotive.

1. The Normative Function

The normative function includes the norms which express transnational interests. In this study, the normative function does not entail just international norm prescription, but effective prescription,[150] which I call operative-pragmatic.[151] Effective prescription must necessarily take into account international pro-self-enforcement modalities which often differ from municipal enforcement versions. Effective prescription must be expressive of the synthesis of sectorial interests at the transnational level, that is, it must be cognizant of the political and resource confines. When the transnational synthesis is not accomplished because of weak political commitment and concomitant compliance behavior, operative prescription is jeopardized.

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[147] Most forest in temperate regions are second-growth forests. However, they represent significant biodiversity. Natalie Angier, *Redefining Diversity: Biologists Urge Look Beyond the Rainforests,* N.Y. TIMES, Nov. 29, 1994, at C1.

[148] *See* Christopher Stone, *Beyond Rio: "Insuring" Against Global Warming,* 85 AM. J. INT'L L. 445 (1992); United Nations Framework Convention on Climate Change, arts. 2, 4(4), 31 I.L.M. 849 (1992).

[149] Prohibiting shifting cultivation has led to the gradual disappearance of a number of food crops which villagers have been cultivating for generations. Measures to conserve the rainforest have led to the extinction of valuable germplasms of traditionally grown species. A number of food and medicinal plant species increased their populations after selective logging. *See* Nimal I.A.U. Gunatilleke & Savitri C.V. Gunatilleke, *Underutilized Food Plant Resources of Sinharaja Rain Forest,* TROPICAL FORESTS, *supra* note 126, at 183, 191; Ramachandra Guha, *Fighting for the Forest,* SUBORDINATED PEOPLES, *supra* note 100, at 20, 34.

The normative function is self-executing and entails the prescription of clear and specific norms. Since these norms originate from the inherent feebleness of the enforcement of international laws and are expressive of transnational interests, they encourage rather than compel lawful behavior. Operative-pragmatic norms are maximum when sectorial and transnational interests coincide under scientific certainty. The legal instruments for the control of ozone depletion[152] constitute operative-pragmatic lawmaking because they are a reaffirmation of the correspondence between state, corporate and transnational interests. In ozone depletion, the combination of specific standards, financial enticements, and sanctions contains the proper proportion of checks and balances. These clearly specific numerical standards are unlikely to be misconstrued. The standards are sustained by financial incentives and, when necessary, by sanctions.[153]

Operative-pragmatic norms cannot be maximally enunciated if not fully supported both scientifically and by a defensible political and corporate alliance. The waste regime[154] exemplifies the problems relating to partial interest correspondence brought on by the uncertain impact of hazardous waste disposal on both humans and the environment.[155] Scientific uncertainty, multiple waste combinations and the complications of monitoring and enforcement render international action more hesitant. The Basel Convention is deprived of both clear substantive norms and operative-pragmatic norms. The Convention's prior notification and informed consent requirement could influence[156] international waste transfers, but it cannot by itself regulate the ultimate means of disposal. The international regulation of waste shipments is a patchwork of principles indicative of disparate interests that might occasionally compromise. For example, the proximity and self-sufficiency principles,[157] if stretched to extremes at boundary situations, can produce conflicting outcomes.[158] However, one principle usually retreats in favor of the other or is transformed by efficiency and effectiveness considerations. The inability to resolve the dissension between the principles creates a decisional suspense and induces case-by-case arrangements. Therefore, the waste transfer regime is more of a representation of the discursive function rather than of the normative function.

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[150] W. Michael Reisman, *Sanctions and Enforcement*, INT'L LAW ESSAYS 386, 406 (1991).

[151] LOUKA, *supra* note 26, at 17.

[152] *See supra* note 11. The Montreal Protocol sets specific deadlines for reduction and final elimination of CFCs and other ozone depleting substances. *Id.*; *see also* Adoption of Adjustments and Amendment by the Fourth Meeting of the Parties at Copenhagen on 23-25 November 1992, 32 I.L.M. 874 (1993) (accelerating the deadlines included in the Montreal Protocol) [hereinafter Adoption of Adjustments]. The adjustments—binding on the signatories without ratification—move the deadline for the elimination of CFCs, carbon tetrachloride, methyl chloroform from the year 2000 to 1996. Reduction of these substances to the 1986 levels has been moved forward to January 1, 1994. The amendments include a total phase-out of hydrochlorofluorocarbons (HCFCs) by 2030 and controls on hydrobromofluorocarbons (HBFCs) and methyl bromide. *Id.* For the new amendments to the Ozone Protocol, see William K. Stevens, *100 Nations Move to Save Ozone Shield*, N.Y. TIMES, Dec. 10, 1995, at 6, col. 4.

[153] Report of the Fourth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, Agenda Item 9, Annex IV, at 46, UNEP/Ozl.Pro.4/15 (Nov. 25, 1992).

[154] *See* Basel Convention, *supra* note 33, 28 I.L.M. at 649 (allowing the export of hazardous waste to developing countries so long as the receiving country approves the transfer).

[155] *Id.* (the Basel Convention permitted developing countries to import hazardous wastes from developed countries ostensibly for financial gains).

However, international waste regulation is not impossible because of the connection between the transnational and corporate interests.[159] Corporations' attempt to minimize illegal waste transfers while supporting transnational waste management. The commitment of states is also positive, since verbal support for self-sufficiency is often negated by opposite practices. Therefore, transnational interests can assume a definite articulation. However, this articulation will be minimum since waste is not a priority issue.[160] Minimum operative norms encompass technological standards inclusive of land disposal. Land disposal is the least expensive waste management method, and it is widely applied by waste generators who bear the disposal costs. Therefore, the incorporation of land disposal and environmental safeguards into international regulation helps diminish illegal waste trafficking. Minimum standards must take into account the ability of developing countries to adopt state-of-the-art technology. In other words, according to the definitional limitations of the normative function accepted here, in order to be operative, minimum standards must be self-enforcing to a certain degree. Further, minimum standards must be followed-up by norms permissive of waste transfers which encourage the development of scale economies. In this context, an extremely restrictive prior notification and informed consent requirement should be reconsidered.[161] The same holds true with the current prohibitions or restrictions on waste movements.

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[156] *See* LOUKA, *supra* note 26, at 31. These influences can be positive or negative. *Id.* The prior notification and informed consent requirement could exercise positive influence on international waste transfers if it does not depend on excessive bureaucracy. *Id.* In that case it could provide a tool for tracing waste movements. *Id.* A prior notification and informed consent requirement obstructed by heavy bureaucracy and excessive delays could have negative impacts on waste transfers because it will exacerbate unlawfulness. *Id.*

[157] The proximity principle entails waste disposal as close as possible to the place of generation. The self-sufficiency principle mandates that each country or community should take care of its own waste.

[158] LOUKA, *supra* note 26, at 46. Not all national facilities are proximate facilities and vice-versa. *Id.*

[159] *Id.* at 8-12, 22-23, 30-33.

[160] *Id.* at 12-17.

Operative-pragmatic pronouncements are even more cumbersome for biodiversity protection. Strong minimum logging requirements could be prescribed, but they will be flouted by logging corporations that are deprived of motivation to preserve the forests. States are willing to abate illegal logging, but this does not necessarily denote their inclination for conservation. Besides, without resource capability for substantial monitoring and enforcement, forest regulation is divested of real implications. However, pharmaceutical industries seem to be concerned with the protection of biodiversity, although this concern is limited.

Normative prescription becomes extremely difficult because interests are incompatible and there is no concensus on the methods or extent of biodiversity conservation. The realization that some biodiversity must be conserved without threatening basic survival needs, points more to a case-by-case resolution than a normative solution. Failure to attain substantive normativity does not preclude the pursuit of a procedural minimum. In the case of wastes, the prior notification and informed consent requirement constitutes, for better or worse,[162] such a minimum. For habitat protection, the Biodiversity Convention, while cryptic about the means and the quantitative goals of biodiversity protection, provides a procedural minimum. The Convention dissipates the uncertainty about the control of biodiversity resources by giving control of these resources to the sovereign state.[163] Another procedural minimum could involve more efficient use of existing and proposed deforestation monitoring technology. While most satellite technology already belongs to developed countries, developing countries increasingly have become aware of its potential and employ it for many purposes.[164] Some developing countries can now launch their own satellites.[165] The use or ownership of satellite technology will increase as prices decrease,[166] and the technology becomes indispensable for developmental purposes.[167] For instance, satellite information could be useful for monitoring deforestation. Nonetheless, monitoring, could not provide means for deforestation abatement, but could prepare the groundwork for such an abatement.

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[161] *Id.*

[162] *Id.*

[163] Biodiversity Convention, *supra* note 116, art. 15, 31 I.L.M. at 826.

[164] Senthil Ratnasabapathy, *Environment: Developing Countries Benefit From Space Technology*, INTER PRESS SERVICE, June 20, 1994, *available in* LEXIS, Nexis Library, All Abstracts File. Many developing countries use satellite monitoring in order to predict weather patterns that cause natural disasters. *Id.*

[165] *Id.* For example, India, Brazil, and China. *Id.*

[166] Tim Furniss, *Satellite Receiver Turns PCs into Space Spies*, SUNDAY TIMES, Aug. 7, 1994, in Features Section.

[167] *See Western Forest Fires as Seen from Satellite*, CHICAGO TRIBUNE, Aug. 18, 1994, at 1. Satellites are important in monitoring and detecting forest fires. *Id.* Satellites are also important in identifying military action and exploring the ocean. Phil Davison, *Jungle Growth for Mexican Opposition*, INDEPENDENT, Aug. 6, 1994, at 9; Beth Livermore, *Bottoms up: Satellite Images Turn up the Focus on the Ocean's Floor*, SEA FRONTIERS, May 1993, at 40, *available* in LEXIS, Nexis Library, All Abstracts File.

2. The Discursive Function

The discursive function is situated always in the background of the normative and promotive functions. All functions are diachronically discursive since norms frequently change as societal goals are transformed. However, at this juncture, I will utilize the discursive function *stricto sensu* as a precursory, pre-normative function.

The purpose of the discursive function is to entertain cooperation when normative compromise is infeasible due to interest inconsistency. The discursive function is the corollary of the plethora of conflicting prescriptions—expressive of interest incongruity—with remote possibilities for compromise. The discursive function is evident in the indeterminate language of many international instruments. Its aim is the maintenance of international civility in the absence of conciliatory elements that could effectively guide international action. Political-pragmatic norms provide an illustration of the discursive function. Political-pragmatic norms couch politically modest goals and policies in a popular verbiage in order to induce their endorsement by certain constituencies. These norms may also contain conflicting principles that permit multiple exits in cases of disagreement and confrontation. I have classified the Basel Convention as a political-pragmatic instrument because it contains conflicting principles that could provide diverse interpretations in case of conflict. More explicitly, the proximity and self-sufficiency principles can be mutually exclusive since not all national facilities are proximate to the place of generation. Efficiency and effectiveness concerns embodied in the text of the Convention enlighten proximity and self-sufficiency applications, but they are frequently forgotten in the midst of disputes.[168]

Conflicting principles are not the only political-pragmatic element of the Basel Convention. The discrepancy between the normative minimum and the preambular goals of the Convention is political-pragmatic. One of the definite norms included in the Convention is administrative—the prior notification and informed consequent requirement—which could arguably limit future waste shipments but not waste production, which is the desirable preambular goal.[169] Thus, in order to advance the Convention's appeal, the modest goal of waste transfer minimization is disguised in the popular vernacular of waste reduction.

This political-pragmatic legislative style with potentially uncompromising principles and procedural norms at variance with stated goals, is the outcome of the negotiated arrangement that increased the Convention's acceptability by diminishing its normativity. The purpose of political-pragmatic norms is to factor an initial agreement that could provide the foundation for a normative understanding. As long as political-pragmatic norms are construed broadly and with full awareness of the indeterminacy they embody, they could provide a discursive apparatus for the reverberation of the arguments of the international *polis*. Political-pragmatic norms could provide the framework for international discourse that could ultimately, but not necessarily, lead to a normative solution. Political-pragmatic norms embody simmering international disagreements, which become non-recognizable through legal discourse.

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[168] *See, e.g.*, Commission v. Belgium, Case C-20/90 (1992) [hereinafter Wallonia Case]. The European Court of Justice based its decision regarding waste imports from other Member States into Belgium on the proximity principle without obvious concern about other principles. *Id.*

[169] Basel Convention, *supra* note 33, pmbl., 28 I.L.M. at 650.

Another expression of political-pragmatic norms appears in the exclusive prohibitions contained in international environmental regulations. The pronouncement of such prohibitions becomes exclusive due to the open-ended nature of the attached exceptions. For instance, certain international instruments absolutely prohibit international dumping activities, but the vagueness of appended deviations effectively dilutes the scope of prohibitions.[170] The prohibitions become a misnomer for an indistinguishable patchwork of regulatory policies[171] and the abandonment of international regulation to national governments. Exclusive prohibitions immersed in a declaratory language at variance with actual prescription are political-pragmatic. As emphasized, political-pragmatic instruments are not representations of normative consistency. When national governments undertake the operation of exclusive prohibitions, the normative regularity is postponed until governmental action takes place. When such action is discordant or erratic, normative synthesis is deferred indefinitely. This seemingly regulatory process generates a discourse which facilitates an understanding on general intentions and priorities—an understanding indispensable for the articulation of international agenda.

However, political-pragmatic norms are sometimes pronounced without reference to their conflicting equivalents, and are subject to an operative-pragmatic promotion. An example is the case of precautionary and sustainable development principles. Sometimes these principles are promoted as ones that prescribe specific action independent of costs and present human needs. This promotion may jeopardize the discursive function, and could generate non-discursive patterns because the operative-pragmatic arrival is not genuine. Sectorial interests that understate the conflicting nature of the norms visualize political-pragmatic norms as operative-pragmatic. These sectorial interests then advance preferred one-sided alternatives. Because solely operative-pragmatic projection is unsuccessful when the compromise of antithetical interests is elusive, the fruitfulness of such efforts is dubious.

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[170] Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Dec. 29, 1972, 26 U.S.T. 2403, T.I.A.S. No. 8165, 1046 U.N.T.S. 120 [hereinafter London Dumping Convention]. In the London Dumping Convention, substances totally banned from ocean disposal are included in the black list. *Id.* However, when wastes are rendered harmless by the natural processes of the sea, the prohibition is inapplicable. This type of equivocal exception undermines the notion of prohibition not only because it is financially impossible to monitor the exception, but also because of the lack of exact and unified practices to test its implementation. The same is true with the ban on whaling, perhaps to a lesser extent because of the limited number of concerned states. The ban does not apply when whaling is done for the purposes of aboriginal subsistence or for scientific purposes. *See* GAO, RCED-92-43, INTERNATIONAL ENVIRONMENT: INTERNATIONAL AGREEMENTS ARE NOT WELL MONITORED (1992).

[171] London Dumping Convention, *supra* note 170, art. 3, 26 U.S.T. at 2407, 1046 U.N.T.S. at 126. After stressing the exceptions included in the black list, it is difficult to distinguish the black list policies from the grey list policies. The grey list establishes even more flexible parameters for the regulation of dumping by national governments.

Political-idealistic norms provide another illustration of the discursive function. Political-idealistic norms are inclusive of prohibitions: for example, the ban of waste imports into the African region[172] and the recent ban of North-to-South waste transfers.[173] Since these prohibitions are clear and specific, with no ambivalent exceptions, one would expect that they are normative. However, I have defined the normative function as inclusive of effective prescription. The norm cannot be absolute prohibition because the treaty language and the financial capabilities of the states do not support the required extensive and expensive monitoring and enforcement procedures. Operative-pragmatic norms are the derivative of a transnational synthesis, and therefore embody the scarcity of resources, state commitment and compliance behavior. Expensive to enforce prohibitions cannot be categorized as operative-pragmatic. They should more appropriately be called political-idealistic. Political-idealistic norms are guided by politically popular goals pronounced forthrightly but without means for their materialization.

Frequently, political-idealistic norms constitute an outgrowth of certain sectorial interests. Because of their ardent support for political-idealistic norms, these interests are not eager to enter into a new discourse after the formal adoption of the norms, despite the enforcement limitations. However, it could be speculated that enforcement constraints will transform political-idealistic into political-pragmatic norms in the near future. After all, the discrepancy between goals and means could provoke a non-serious consideration of the norms that simply provides a point of departure for ingress into international discourse. Under the encompassing tendencies of their political element, political-pragmatic, and political-idealistic norms will enventually coincide because of the inability to pinpoint the pragmatic and the degeneration of idealistic.

In the waste management context, I earlier stated that the political-pragmatic purpose is to conceal moderate goals and policies under a popular language in order to induce acceptability. Also, it has been emphasized that political-pragmatic norms spring from conflicting principles or the linguistic hiatus between the preambular goals and the prescribed normative minimum. These discrepancies are due to the inability to pronounce a synthesis at the transnational level.

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[172] *See* Basel Convention, *supra* note 33, art. 6, 28 I.L.M. at 654.

[173] *See supra* note 35, at 132.

Similar discrepancies exist in forest management due to the gap between the sectorial and transnational interests. The interest disparity is evident in the absence of a comprehensive international or regional forest agreement. Regional agreements concentrate on forest management[174] with conservation overtones,[175] or constitute nothing more than an affirmation of the potential for conciliation of multiple forest uses:[176] recreation, timber, wildlife protection, and grazing. Therefore, within the framework of forest conservation, the political-pragmatic character is due to the difficulty of implementing simultaneously different forest uses.[177]

In contrast with waste management, the conflict is not external (between principles), since the prevailing principles are all encompassing and not opposing,[178] but internal (within each principle). Each principle seems to allow for harmonious forest uses. But reality shows the uses as largely confrontational. Even minimum administrative norms that could provide some sort of a normative foundation are sparse and indeterminate. Examples include the participation of indigenous populations in the management of forest resources,[179] and the environmental impact assessment.[180]

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[174] *See* Treaty for Amazonian Cooperation, 1980, *reprinted in* 7 ENVTL. POL'Y & L. 46 (1981).

[175] *See* International Tropical Timber Agreement, Jan. 10, 1994, U.N. Conference on Trade & Development Doc. TD/TIMBER.2/Misc.7/GE.94-50830 (1994) [hereinafter Tropical Timber Agreement].

[176] Non-legally Binding Administrative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests, *adopted* June 13, 1992, 31 I.L.M. 881 [hereinafter Forest Principles]. In the Forest Principles, the forest uses are mentioned accumulatively without identifying their comparative position in forest management or the principle or principles according to which such position is assigned. *Id.* The concepts of Multiple Use (or Multi-Purpose) and Sustained Yield are used increasingly in national legislation, but they do not provide clear guidance when specific forest management decisions are to be made. *Id.* The concept of multiple use entails two different approaches on managing forests: the Joint Production and Dominant Use approaches. Forest Principles, *supra*, art. 6(b), 31 I.L.M. at 884. The joint production approach recognizes that forests are ecosystems that produce more than one value. *Id.* For example, forests can be used for their timber, for recreation, for wildlife protection or as rangelands. However, management of one use will usually affect the others in unpredictable ways. Forest Principles, *supra*, art. 6(d), 31 I.L.M. at 884. In other words, while the concept of joint production reflects an adequate description of desirable forest management, it fails to provide prescriptions for decisionmaking. Forest Principles, *supra*, art. 8(h), 31 I.L.M. at 885.

The dominant use approach provides clearer direction to forest managers since it means separating uses in space and time. WESTOBY, *supra* note 69, at 34. However, it can again create conflicts since forests are complex ecosystems in which it is very difficult to meaningfully separate uses. *Id.* More often, instead of dominant use, the concept of dominant uses is applied which is basically a patchwork of joint production and dominant use approaches. *Id.*

The concept of sustained yield is a more clear-cut concept. It prescribes that the management of forests should not jeopardize the productivity of land. MATHER, *supra* note 68, at 185-197. While it is important to establish such a threshold, it could also be characterized as falling short of conservation expectations. *Id.* It usually assumes that producing more of one value (most often timber) is better—as long as land productivity is maintained—without regard to other values (e.g., minor forest products, recreation, wildlife protection). *Id.*

The notions of Multiple Use and Sustained Yield, despite their vagueness and obvious shortcomings, have helped to set the tone of policy debate in many countries. They have provided the background that allowed for consideration of diverse policy options, and have led to reconsideration of policies that put timber on the top of the list of desirable alternatives. UNITED STATES OFFICE OF TECHNOLOGY ASSESSMENT (OTA), FOREST SERVICE PLANNING 43-44, 47 (1992) [hereinafter OTA].

[177] Forest Principles, *supra* note 176, art. 2(b), 31 I.L.M. at 883.

[178] *See supra* note 176.

The negotiating stages of international agreements provide another illustration of the discursive function. In 1992, Austria proposed the introduction of eco-labelling (or certification) for the trade in tropical timber, a demand repeated in 1994 in the new timber agreement which calls for sustainable tropical timber development by the year 2000.[181]

Initially, Indonesia and Malaysia responded negatively to such a scheme, but they have lately reconsidered their positions due to illegal logging.[182] Timber certification could make it possible for them to trace lost revenues from illegal activities.[183] Therefore, the initial demands for sustainable logging could become demands for authorized logging. The normative compromise would contain state certification enveloped in internationally unverifiable requirements for sustainable logging. State certification could avert the worst logging practices provided they are not profitable for the state. Nonetheless this will be quite different from the initial understanding of sustainable logging which is inclusive of environmental safeguards. After the procedural insertion of state authorization, the discourse could proceed for a more refined, "closer to the original" definition of sustainable logging.

The purpose of the discursive function is to entertain through legal parlance procedures for the identification of divergent interests and their prospects for compromise. The discursive function could be consolidated in equivocal international agreements entailing at least a procedural starting point or a minimal consensus for future action. Further, the discursive function serves as a detection mechanism of unidentified interests and a groundwork device for substantial state interaction. The discursive function is fundamental for the cultivation of international environmental law. Without it, the prospects for international environmental development would be dismal.

At the core of the discursive function is the belief that international issues cannot be resolved without cooperation and the maintenance of a minimum level of communication. Therefore, it is unfortunate that frequently discursive instruments are perceived or promoted as non-discursive. Conclusive normativity is not the *sine qua non* consequence of the discursive function, particularly for issues with significant domestic repercussions, like forest depletion. Cases with a strong domestic component cannot command strong state commitment, and are defined as being at the threshold of transnational interests. When transnational interests are distinguishable, the discursive function could lead to normativity, or could even enclose promotive elements.

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[179] *See supra* note 118 and accompanying text.

[180] Forest Principles, *supra* note 176, art. 8(h), 31 I.L.M. at 885; Biodiversity Convention, *supra* note 116, art. 14(1)(a), 31 I.L.M. at 827.

[181] *See* Tropical Timber Agreement, *supra* note 175, art. 1(e).

[182] *See Chainsaw Massacres*, *supra* note 77, at 39.

[183] *Id.*

3. The Promotive Function

In this section, the promotive function is defined narrowly as an extension of the normative function. As analyzed, operative norms can be enunciated as maximum or minimum norms and are essentially self-enforcing. The self-enforcement component is important in an international atmosphere traditionally inhospitable to enforcement and with limited resources. However, operative-pragmatic norms can occasionally exceed their self-enforcing capacity and incorporate third-party monitoring and enforcement.

As analyzed in ozone depletion, complete interest correspondence conveyed the adoption of maximum standards that have drastically curtailed the production of ozone depleting substances. Despite their maximum character, these standards are self-enforcing because they are based on a detailed consensus of pertinent interests that are willing to undertake cohesive action. Self-enforcement is further stimulated by financial incentives,[184] especially to countries likely to defect from the established regime. Depending on circumstantial application, the non-compliance procedure could assume enforcement or self-enforcement overtones.[185] The non-compliance procedure provides that[186] states can express their reservations about another state's compliance[187] by submitting their concerns to the Secretariat which, in turn, informs the implementation committee.[188] Upon the invitation of the state concerned, the implementation committee may undertake, *inter alia*, information gathering in the territory of the state.[189] The Committee must finally report to a conference of the parties and make recommendations.[190] The report, which does not contain information received in confidence, must be made available to any person upon request.[191] Confidential information exchanged by or within the Committee may be provided only to state-parties, as long as the states ensure that they will maintain the confidentiality of information.[192] The non-compliance procedure includes an "Indicative List of Measures that Might be Taken by a Meeting of the Parties in Respect of Non-Compliance with the Protocol."[193] These measures encompass appropriate assistance, cautions and suspension of specific rights and privileges associated.[194] Examples include industrial rationalization,[195] production, consumption, trade, transfer of technology, financing and institutional arrangements.[196] This array of non-compliance measures could provide the conference of the parties with powerful means of enforcement that is unprecedented in any other international environmental convention and quite unusual for the legislative legacy of international law.[197]

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[184] The fund established under the Montreal Protocol has been able to financially assist developing countries' compliance. *See Jordan Gets Aid for Environment-Protection Program*, Xinhua General Overseas News Service, Feb. 16, 1993, *available in* LEXIS, Nexis Library, All Abstracts File; *Venezuela and South Korea Active in Implementing Montreal Protocol*, Ozone Depletion Network Online Today, May 19, 1993, *available in* LEXIS, Nexis Library, All Abstracts File; *India Ready for Operation Ozone*, Xinhua General Overseas News Service, May 12, 1993, *available in* LEXIS, Nexis Library, All Abstracts File; *UNDP to Help China Phase Out Ozone-Depleting Substances*, Xinhua General Overseas News Service, April 24, 1993, *available in* LEXIS, Nexis Library, All Abstracts File.

[185] *See Report of the Second Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, June 1990, para. 40, Decision II/5, UNEP/OzL. Pro.2/3, at 11; Annex III, UNEP/OzL. Pro.2/3, at 40 (1990). The non-compliance procedure is an expansion of the procedure that was adopted at the Second Meeting of the Parties. *Id.*

[186] *Report of the Fourth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, Nov. 25, 1992, Agenda Item 9, Annex IV, at 46, UNEP/OzL.Pro.4/15 (1992).

[187] *Id.*

[188] *Id.* The implementation committee consists of 10 parties elected by the meeting of the parties for two years based on equitable geographical distribution. *Id.*

[189] *Id.*

[190] *Id.*

Because of the partial interest coincidence, minimum operative norms are less liable to conventional enforcement. For example, the purpose of minimum waste management standards is to induce self-enforcing behavior due to the high price of enforcement. However, enforcement is not excluded; it just has to be based on the self-enforcing minimum standards. In the waste management regime, minimum standards cannot function effectively without liability rules.[198] Liability could provide the ultimate defense when compliance interests are not responsive to the self-enforcing apparatus. Because of the inevitabley insufficient monitoring, liability should apply only when the minimum standards are violated, while the severity of penalties must take precedence over the frequency of penalties.

Traditional enforcement of operative-pragmatic norms independent from self-enforcement will be cost-ineffective because it will fail to utilize a readily available inducement apparatus. Therefore, the promotive function could be conceived as the normative function's extension. The promotive function involves operative-pragmatic norms that utilize their inherent self-enforcing capacity and command an international pro-enforcement consensus.

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[191] *Id.*

[192] *Id.*

[193] *Id.*

[194] *Id.*

[195] *Id.* Industrial rationalization allows a party to transfer some or all of its production of controlled substances to another party that has already reached its level of capacity. *Id.*

[196] *See Report of the Fourth Meeting of the Parties to the Montreal Protcol on Substances that Deplete the Ozone Layer*, *supra* note 185, Annex V, UNEP/OzL.Pro.4/15.

[197] *Id.* However, while the committee has played an activist role in increasing states' reporting, it has been slow to realize its full enforcement potential. *Id.* From the beginning, state parties have been reluctant to raise issues of compliance, even in cases where member states have shown a weak commitment to enforcement. *See* Edward A. Parson & Owen Green, *The Complex Chemistry of the International Ozone Agreements*, ENVIRONMENT, March 1995.

[198] *See* LOUKA, *supra* note 26, at 19.

4. The Purpose of International Environmental Law

International law is essentially a system of confabulation[199] in formal parlance—an exchange of positions and counterpositions until a normative, or ideally, an operative-pragmatic apex encloses a new discursive undertaking. The diplomatic institutions at the core of international law are indicative of its discursive nature. Diplomacy is nothing more than an exploration *ad infinitum* of tendencies, intentions, and conflicting interests. It is a process of state interaction aiming at a normative compromise or at examination and prediction of upcoming tendencies.

There is a widespread feeling that the post-cold war international legal system should be bolder and more aggressive in monitoring and enforcing international behavior. However, the exponential growth of international issues, resource unavailability and conflicting preferences have not generated the necessary willingness for a drastic reconditioning of international law. The resource-issue discrepancy reveals that the most promising avenue for the future of international environmental law may not lay in its infusion with enforcement mechanisms, but with self-enforcing and discursive ones. Because of the multiple crises in various areas of the world and the resource insufficiency,[200] an effort to strengthen the qualities of international environmental law may be more fruitful than an effort to mend its perceived shortcomings. Further, these qualities involve the utilization of a decentralized inducement apparatus comprised of discursive and operative-pragmatic elements that sustain interactive communication. If more regulation becomes feasible and desirable, operative-pragmatic norms with their self-enforcing qualifications, will reduce enforcement costs. This is important because traditional enforcement is becoming prohibitively expensive for most issues holding no priority status.

Attempts to introduce domestic enforcement modes that disregard the resource potential in the international sphere will induce an unnecessary functional perplexity that is particularly pointless in a period of domestic lawmaking that seems to reconsider the attributes of traditional enforcement. Municipal environmental law often includes strict and complicated provisions that are sometimes in huge discrepancy with the resource potential and enforcement capability.[201] Therefore, a rupture between the stated norms and compliance practices is not uncommon. Because of the inefficiencies of such regulatory measures, domestic systems have started to reconsider the possibilities offered by self-enforcing means. Some domestic regulatory instruments for the environment are now enriched with incentives that entice compliance.[202] Even chronically persistent criminal behavior is recently challenged by concentrating on interests susceptible to financial rather than traditional blackmails.[203] Therefore, it could be speculated that in the future domestic and international law will rely extensively on self-enforcement, because neither can afford expensive and extensive enforcement for complex issues.

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[199] See Myres S. McDougal et al., *The World Constitutive Process of Authoritative Decision*, INT'L LAW ESSAYS, 191, 275 (1991).

[200] Christopher S. Wren, *The U.N.'s Master Juggler: An Accountant Copes with Deadbeats and Bad Debt*, N.Y. TIMES, Dec. 8, 1995, at C1, col. 3.

[201] *See, e.g.*, LOUKA, *supra* note 26, at 112-93. For example, the United States and European Union regulations regarding waste management. *Id.*

[202] *See, e.g.*, Clean Air Act Amendments of 1990, 42 U.S.C. 7651-7651(o) (Supp. II 1990).

However, some "municipalization" of international environmental law is highly desirable, because it regards the actors involved in and affected by international lawmaking.[204] International environmental law cannot effectively function by addressing state behavior only. It must affect the compliance conduct at the source of environmental degradation. This could simply be accomplished under the conventional device of interstate agreements provided that these agreements are inclusive of interest performance, and of self-enforcing mechanisms for the alteration of such performance. A perfect example is the prescription of promotive mechanisms, largely private liability mechanisms, that function as a protraction of operative-pragmatic mechanisms. Promotive liability mechanisms are highly desirable and are acceptable to states because they appease demands for state responsibility.

The discursive, operative-pragmatic, and promotive functions of international environmental law are inherent in its international character. International environmental law presents all the characteristics of international law: a preference for self-enforcement over enforcement, and for communication over coercion. Self-enforcement is an inherent characteristic of international law because of its minimum goal: the peaceful coexistence of states. A goal that could not be reached by overreliance on coercive mechanisms, which are by definition antithetical to the notion of voluntary peaceful coexistence. However, international law is certainly not devoid of conventional enforcement measures. But under regular circumstances, such measures are only of last resort.

The goal of peaceful co-existence must be a priority goal because during a state of war, environmental protection will be minimal. A peaceful coexistence alters perspectives regarding the utility and desirable functions of international environmental law, and shifts attention from the normative and promotive functions to the discursive function. But the goal of peaceful coexistence is not prevalent today in international parlance. On the contrary, it is frequently stated that the primary goal of international environmental law is the preservation of the environment. Appraising international environmental law from a peaceful coexistence perspective rather than an environmental perspective does not mean that international instruments cannot be protective of the environment. International environmental law simply emphasizes that environmental protection constitutes a maximum goal which is unattainable without the intermediate goal of peaceful coexistence. Outside the framework of a minimum peaceful coexistence, the notion of the environmental protection becomes moot and environmental safeguards are made practically unenforceable.[205]

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[203] David A. Andelman, *The Drug Money Maze*, FOREIGN AFF., July/August 1994, at 94. The author proposes dealing with drug trade by introducing more transparency in the banking sector. *Id.*

[204] *See generally* McDougal et al., *supra* note 199, at 201 (stating that the goal of international law is to positively affect the lives of individuals).

It could be argued that international environmental law does not need to strive for peaceful coexistence, and that it is the ambition of just another section of public international law. Further, despite some extreme pronouncements, international environmental legislation is too innocuous to disrupt peaceful coexistence. This is a fallacious argument not only because international environmental law is not that innocuous,[206] but also because it fails to perceive the interconnectedness of the international system. Environmental regulation must not work against the goals of the international system by using non-cooperative patterns that jeopardize state interaction. Non-cooperation will ultimately harm the final goal of environmental protection. International environmental law will eventually be protective of the environment as discursive norms are joined by substantive norms, operative-pragmatic or promotive in nature. However, the ultimate objective of environmental protection must not override the larger purpose of the preservation of a minimum international order. The fervor for environmental protection must not endanger cooperation and the general understanding among states.[207]

The change in the measure of appraisal proposed here—from environmental preservation to peaceful coexistence—should dissipate frustrations and modify expectations about the enforcement capability of international environmental law. It should also envelop in a new light the ability of international environmental law to generate even a minimal or seeming consensus. From a global perspective, consensus,[208] even at a minimal or seeming level, is far more beneficial than strict standards that resemble domestic legislation and are implemented by certain privileged states. Strict and unaffordable standards will induce some states to apply no standards, and will allow compliance interests to transfer pollution to those zero-standard states. Strict standards will create global and long term externalities and will eventually undermine otherwise effective domestic legislation. Further, strict standards will induce non-discursive patterns since they involve the exclusion of certain states from the club of preservationist states. Examples of non-discursive patterns are the institutionalized prohibitions of international activities and unduly restrictive legislation that alienates many states.[209] A non-discursive attitude is especially counterproductive when it leads to the exclusion of states that are instrumental in the resolution of an environmental dispute.[210] International environmental law cannot afford to not regulate the behavior of the greatest number of states. This inclusive nature of international environmental law accentuates the importance of the discursive function and operative-pragmatic normativity.

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[205] *See, e.g.*, Karen Tumulty, *Environmental Weapon Used Before*, L.A. TIMES, Jan. 29, 1991, *available in* LEXIS, Nexis Library, All News File; Arthur H. Westing, *The Environmental Aftermath of Warfare in Viet Nam*, 23 NAT. RESOURCES J. 365 (1983).

[206] International environmental law deals with resource issues often at the heart of recriminations and adversity among states. The Gulf War could, for instance, be viewed as a war over oil resources..

[207] *See* David D. Caron, *The International Whaling Commission and the North Atlantic Marine Mammal Commission: The Institutional Risks of Coercion in Consensual Structures*, 89 AM. J. INT'L L. 154 (1995).

[208] *See, e.g.*, Philip C. Jessup, *Diversity and Uniformity in the Law of Nations*, 58 AM. J. INT'L LAW 314, 344 (1964).

The different interpretative outcomes of preservationist and peaceful coexistence viewpoints are highlighted by the Biodiversity Convention. The Biodiversity Convention could be considered a failure because it contains indeterminate and conflicting provisions and has no monitoring and enforcement capacity. From a preservationist viewpoint, the Convention is flimsy and will not contribute significantly to the protection of biodiversity without further modification. However, from a peaceful coexistence viewpoint, the Convention is a success. It succeeded in bringing together states on a very contentious issue, established procedural rules for biodiversity protection, and even provided for financial assistance.[211]

The rest of the Convention could be considered discursive with embedding possibilities for normative compromise.

Today the emphasis on the environmental component of international environmental law has contributed to its departmentalization. International environmental law is increasingly conceived as a subject for municipal lawyers, scientific experts or environmental advocates. The infusion of these actors has enriched international law with fresh issues and concerns, but simultaneously has altered expectations about the possibilities of such law. More importantly, it has distanced international environmental law from its origins, which are incentive- and discourse-based rather than coercion-oriented. Frequently, international environmental law is perceived as an international application of domestic law, and is confronted with similar demands for good and bad citizen institutionalized divisions. These demands are outdated, even under modern domestic perspectives.

Even if the ultimate goal of international environmental law is a maximum order of environmental protection, it cannot be accomplished without taking into consideration the attributes of international law. Disregard of these attributes and ensuing strategies, and imposition of foreign expectations will constitute an obtuse utilization of international environmental capacities. Within its capabilities, international environmental law can provide environmental protection and strengthen international cooperation. However, it does not and cannot constitute a substitute for local action. International environmental law can, within its realm, provide for cooperative arrangements, alter perspectives and practices and furnish a framework for change. But it cannot become the *deus ex machina* that will impose such change.

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[209] *See, e.g.*, *The Price of a Tusker*, ECONOMIST, Oct. 14, 1989, at 19 (stating that bans on trade in endangered species alienate exporting states which believe that exports provide the local populations with incentives to preserve the species).

[210] *See Ivory; Poached? Moi*, ECONOMIST, Oct. 13, 1990, at 92. Many African countries do not observe the ban on exports of elephant ivory. *Id.*

[211] *See* Biodiversity Convention, *supra* note 116, art. 8, 31 I.L.M. at 827.